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1961 REGULAR SESSION

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HON. RALPH M. BROWN
Speaker

HON. CARLOS BEE
Speaker pro Tempore

HON. WILLIAM A. MUNNELL
Majority Floor Leader

HON. JOSEPH C. SHELL
Minority Floor Leader

ARTHUR A. OHNIMUS
Chief Clerk of the Assembly

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Keeping Pace With Needs of Motor Vehicle Ownership and Use

A REPORT ON STAGE ONE, THE FACT-GATHERING PHASE, OF A THREE-STAGE STUDY OF CALIFORNIA'S ADMINISTRATION OF MOTOR VEHICLE AFFAIRS

Initiated Under Direction of House Resolution 381, Read and Adopted June 18, 1959

STATE OF CALIFORNIA

ASSEMBLY INTERIM COMMITTEE ON TRANSPORTATION AND COMMERCE

L. M. BACKSTRAND, *Chairman*
EDWARD M. GAFFNEY, *Vice Chairman*

TOM BANE
FRANK P. BELOTTI
CHARLES E. CHAPEL
WALTER I. DAHL
CLAYTON A. DILLS
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CHARLES W. MEYERS
NICHOLAS PETRIS
W. BYRON RUMFORD
CHET E. WOLFRUM

FLORENCE JOHNSON, *Secretary*

January, 1961

Published by the
ASSEMBLY
OF THE STATE OF CALIFORNIA

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Chief Clerk of the Assembly

CALIFORNIA ASSEMBLY

HOUSE RESOLUTION NO. 381—ASSEMBLYMAN L. M. BACKSTRAND

Relative to Studies of the Administration of Motor Vehicle Affairs

WHEREAS, Motor vehicle transportation has grown at a phenomenal pace in California in recent years and there is clear prospect that its growth in the future will be even more spectacular; and

WHEREAS, The Legislature after much diligent and continuing study has developed successful programs for the financing, constructing, and maintaining of the highway plant; and

WHEREAS, It is equally essential that concerted attention and study be given to motor vehicle functions, other than the financing and engineering of highways, if optimum service is to be rendered to the people of California; and

WHEREAS, The administration of all motor vehicle affairs, not only involves tremendous costs which are certain to increase greatly in the future, but also affects the lives and welfare of our citizens; and

WHEREAS, Deficiencies and inconsistencies in the law pertaining to motor vehicle affairs may have resulted from failure to develop an overall approach, which would clearly define basic policy objectives that would provide guidance to affected administrators, and which would also provide for re-evaluation of traditional activities in the light of changing and anticipated conditions; and

WHEREAS, State difficulties in dealing evenly with the many problems inherent in the administration of motor vehicle affairs may lead to unwelcome activity in this field by the federal government, a possibility suggested by current studies initiated by the federal government to determine what it should do to promote highway safety; and

WHEREAS, The facts heretofore cited have been recognized by the Western Interstate Committee on Highway Policy Problems, the American Association of Motor Vehicle Administrators, and the International Association of Chiefs of Police, all of whom by resolution have urged that state legislatures make provision for study of current problems and future needs in the administration of motor vehicle affairs; and

WHEREAS, Basic issues of state transportation policy are involved in the provision of service, the control of privilege, and exercise of police power with respect to administration of motor vehicle affairs, which issues should be given comprehensive study; and

WHEREAS, Illustrative activities that should have benefit of such study include driver education and licensing; vehicle registration and title issuance; financial responsibility requirements; highway-user tax administration; law enforcement as it relates to all highway and motor vehicle affairs; and record maintenance and data collection and analysis in regard to all of the foregoing; and

WHEREAS, Such study should include: (1) an inventory of all functions, activities, and duties of the State pertaining to operations on the highway plant and administration of motor vehicle affairs, together with a determination and evaluation of the purposes and objectives of all such functions, activities, and duties; and (2) an estimate of future needs for effective and economical performance of all such functions, activities, and duties, analyses of benefits in relation to costs in each case, and exploration of alternative means of achieving useful and necessary purposes and objectives; and

WHEREAS, The subject matter of this resolution not only involves long-range research and study as well as immediate investigation, but also cuts across many fronts which will be dealt with by one or more of the duly created interim committees of the Legislature; now, therefore, be it

Resolved by the Assembly of the State of California, As follows:

1. The subject matter of this resolution is assigned to the Committee on Rules for reassignment by it to an appropriate interim committee, which committee shall report thereon to the Assembly not later than the fifth calendar day of the 1961 Regular Session of the Legislature.

2. The chairman of said committee shall, in his discretion, appoint an advisory council on the subject matter of this resolution, which council shall include representatives of departments of the state government, the cities, the counties, and the public generally.

Resolution read and adopted, June 18, 1959.

LETTER OF TRANSMITTAL

ASSEMBLY INTERIM COMMITTEE ON
TRANSPORTATION AND COMMERCE
November 1, 1960

Speaker of the Assembly, and Members of the Assembly
Assembly Chamber
Sacramento, California

GENTLEMEN: In accordance with the mandate of House Resolution No. 381, Regular Session of the California Legislature, 1959, we have the honor to present a report describing the work of the committee during 1959-1960, and the conclusions reached to date in study of state functions bearing on ownership and use of motor vehicles.

Respectfully submitted,

L. M. BACKSTRAND, *Chairman*
EDWARD M. GAFFNEY, *Vice Chairman*

TOM BANE
FRANK P. BELOTTI
CHARLES E. CHAPEL
WALTER I. DAHL
CLAYTON A. DILLS
MYRON H. FREW
JOSEPH M. KENNICK
FRANK LUCKEL
PAUL J. LUNARDI
CHARLES W. MEYERS
NICHOLAS PETRIS
W. BYRON RUMFORD
CHET E. WOLFRUM

October 10, 1960

To the Assembly Interim Committee on
Transportation and Commerce

HONORABLE L. M. BACKSTRAND, *Chairman*

We wish to commend the Assembly Interim Committee on Transportation and Commerce for its vigorous action in undertaking the far-reaching study of motor vehicle use and operation. We consider it a distinct privilege to have had the opportunity to meet and counsel with you concerning the development of this study.

The Advisory Council unanimously recommends that the study be continued. We believe the Legislature should adopt a resolution calling for continuation of this long-range study in accordance with the plan which has been developed and initiated.

THE ADVISORY COUNCIL FOR H.R. 381

RAY ASHWORTH
MISS MILDRED BELL
EARL F. CAMPBELL
VERN H. CANNON
RICHARD CARPENTER
FELIX CHAPPELLET
HARRY V. CHESHIRE, JR.
WILLIAM B. CLEVES
HARMER E. DAVIS
WILLIAM R. MACDOUGALL
EDWARD RILEY
MRS. EARL B. SHOESMITH
J. C. SPENCER
C. CLARKE WILLIAMS

AUTOMOTIVE SAFETY FOUNDATION
200 Ring Building
WASHINGTON 6, D.C.

October 15, 1960

HONORABLE L. M. BACKSTRAND, *Chairman*
Assembly Interim Committee on
Transportation and Commerce
State Capitol, Sacramento, California

DEAR MR. BACKSTRAND:

More than a decade ago, California pioneered the development of techniques for statewide engineering measurement of highway needs. Those studies, subsequently carried on in all the states, fixed the dimensions of the long-range road improvement program now under way throughout the country.

But the safe and efficient operation of modern highway facilities is just as important as their construction. And it involves numerous and complex responsibilities of government. Here, too, long-range planning based solidly on facts is essential if the problems of motor vehicle ownership and use are to be met satisfactorily in the future.

The research program which the Assembly Interim Committee on Transportation and Commerce has initiated under H.R. 381 represents a tremendous step forward in that direction. It is another pioneering effort which eventually will benefit not only California but the entire nation.

We in the Automotive Safety Foundation feel privileged to have worked with the committee, with the several departments of state government, and the Advisory Council, in developing and directing this program. In expressing our appreciation, I speak particularly for the members of the foundation staff who have participated as advisers: Mr. Louis R. Morony, Director, and Mr. John H. Magill, of the Laws Division; Mr. John W. Gibbons, Director, Public Relations Division; Mr. D. Grant Mickle, Director, and Mr. David W. Schoppert, Traffic Engineering Division, all of Washington, D.C., and in California, Mr. William S. Foulis, Assistant to the President.

Sincerely yours,

J. O. MATTSON
President

ACKNOWLEDGMENT

The Assembly Interim Committee on Transportation and Commerce acknowledges sincere appreciation to the state officials, and the many organizations and individuals who have given encouragement and assistance in the H. R. 381 study program. Without such support this committee could not have progressed so far in this important study project.

Special acknowledgment is given to members of the advisory council for their counsel and devotion to public service; to the Automotive Safety Foundation for its advice and counsel and the many valuable services performed as study director; and to the Department of California Highway Patrol, the Department of Motor Vehicles, and the Department of Public Works and its Highways Division, for their splendid co-operation and for the hard work their staffs have done to give the H. R. 381 study validity and force.

THE PRESIDENT'S COMMITTEE FOR TRAFFIC SAFETY
532 PENNSYLVANIA BUILDING
WASHINGTON 4, D. C.

WILLIAM RANDOLPH HEARST, JR.
CHAIRMAN

DUDLEY 2-6167

J. W. BETHEA
EXECUTIVE SECRETARY

September 21, 1960

Honorable Lee M. Backstrand
Chairman, Assembly Interim Committee
on Transportation and Commerce
Sacramento, California

Dear Mr. Backstrand:

The President's Committee for Traffic Safety has followed with interest the program your Committee and the department officials of California have been engaged in to evaluate on a factual, long-term basis the needs of your State in the motor vehicle field.

As you have consistently pointed out, California along with all other States, through the process of sound study techniques, has developed long-range plans in the highway construction field and because these findings have had factual validity, public response has been affirmative. By applying, as you are, similar fact-finding procedures in those phases of highway transportation relating to the use of the roads, you are taking positive steps to assure comparable success in matters affecting motor vehicle ownership and operation.

This is a new and forward-looking approach in a field which heretofore has relied mainly upon a year-to-year assessment of needs without full regard to the dynamic growth of highway transportation in terms of increasing number of vehicles, drivers and volume of traffic and the impact of these forces on traffic safety efforts. We are so impressed by this approach that we intend to recommend it to all States in the forthcoming revision of the Action Program.

You and your associates are to be commended for undertaking a program that will lead to a better understanding of the motor vehicle problem involved and result in public acceptance of the needs that must be met in the years ahead.

Sincerely,

W. R. Hearst, Jr.

WILLIAM RANDOLPH HEARST, JR., *PRESIDENT*, HEARST CONSOLIDATED PUBLICATIONS, INC.; J. CALEB BOGGS, *GOVERNOR OF DELAWARE*; CHARLES F. McCAHILL, *SENIOR VICE-PRESIDENT*, CLEVELAND NEWS AND PLAIN DEALER; T. S. PETERSEN, *PRESIDENT*, STANDARD OIL COMPANY OF CALIFORNIA; HOWARD PYLE, *PRESIDENT*, NATIONAL SAFETY COUNCIL; MRS. RAYMOND SAYRE, *PAST PRESIDENT*, ASSOCIATED COUNTRYWOMEN OF THE WORLD; CHARLES B. SHUMAN, *PRESIDENT*, AMERICAN FARM BUREAU FEDERATION; P. L. SIEMILLER, *GENERAL VICE PRESIDENT*, INTERNATIONAL ASSOCIATION OF MACHINISTS, AFL-CIO; ROBERT R. SNODGRASS, *PRESIDENT*, ATLAS AUTO FINANCE COMPANY

STUDY PROGRAM PARTICIPANTS

ASSEMBLY INTERIM COMMITTEE ON TRANSPORTATION AND COMMERCE

L. M. BACKSTRAND, Chairman
EDWARD M. GAFFNEY, Vice Chairman

TOM BANE
FRANK P. BELOTTI
CHARLES E. CHAPEL
WALTER I. DAHL
CLAYTON A. DILLS
MYRON H. FREW
JOSEPH M. KENNICK
FRANK LUCKEL
PAUL J. LUNARDI
CHARLES W. MEYERS
NICHOLAS PETRIS
W. BYRON RUMFORD
CHET E. WOLFRUM

FLORENCE JOHNSON, Secretary

ADVISORY COUNCIL

RAY ASHWORTH
International Association of Chiefs of Police

MISS MILDRED BELL
California Federation of Business and Professional Women's Clubs

EARL F. CAMPBELL
California Traffic Safety Foundation

VERN H. CANNON
California Teamsters Legislative Council

RICHARD CARPENTER
League of California Cities

FELIX CHAPPELLET
Western Oil and Gas Association

HARRY V. CHESHIRE, JR.
Automobile Club of Southern California

WILLIAM B. CLEVES
Chairman, Advisory Committee on Motor Vehicle Legislation

HARMER E. DAVIS
Institute of Transportation and Traffic Engineering
University of California

WILLIAM R. MacDOUGALL
Association of California County Supervisors

EDWARD RILEY
Automobile Manufacturers Association

MRS. EARL B. SHOESMITH
Federation of Women's Clubs

J. C. SPENCER
California State Automobile Association

C. CLARKE WILLIAMS
California State Chamber of Commerce

DEPARTMENT OF CALIFORNIA HIGHWAY PATROL

BRADFORD M. CRITTENDEN, Commissioner
RUSSEL R. MAGILL, Deputy Commissioner
FRED J. BLY, Assistant Commissioner
HENRY A. DURYEA, Supervising Inspector
D. A. WATKINS, Captain
ROBERT C. BLOSSOM, Captain

DEPARTMENT OF MOTOR VEHICLES

ROBERT McCARTHY, Director
TOM BRIGHT, Deputy Director
ABE OSOFSKY, Senior Administrative Analyst
IRA SAMUELS, Associate Administrative Analyst

DEPARTMENT OF PUBLIC WORKS

ROBERT B. BRADFORD, Director
J. C. WOMACK, State Highway Engineer
GEORGE M. WEBB, Traffic Engineer, Division of Highways
FRANK E. BAXTER, Maintenance Engineer, Division of Highways
EMERSON RHYNER, Attorney
CARROLL WHITE, Attorney

STUDY DIRECTOR

AUTOMOTIVE SAFETY FOUNDATION
Washington, D.C.

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(Photos Courtesy of Department of Highway Patrol)

The upper photo is a general scene of the Assembly Interim Committee on Transportation and Commerce public hearing on H.R. 381, August 9-10, 1960, in the State Capitol. Seated in the Committee row, top, left to right, are Assemblyman Tom Bane, Vern H. Cannon, Advisory Council member; Assemblymen Frank Belotti, Nicholas Petris, W. Byron Rumford, and Edward M. Gaffney, vice chairman; Mrs. Florence Johnson, secretary; Assemblymen Lee M. Backstrand, chairman; Paul Lunardi, Chet Wolfrum, Joseph Kennick, and Myron H. Frew. The Advisory Council, second row, left to right: C. Clarke Williams, Earl F. Campbell, Mrs. Earl B. Shoesmith, Edward Riley, L. S. Chappelear, Jr., representing Felix Chappellet; William B. Cleves, Ray Ashworth, Richard Carpenter, Harry V. Cheshire, Jr., Jack C. Spencer, and Richard Zettel, representing Harmer E. Davis. At front, testifying, left to right, are Captain D. A. Watkins, Commissioner Bradford M. Crittenden, and Captain Harold K. Jacobs, Department of Highway Patrol.

In lower left photo, left to right: Abe Osofsky, Senior Administrative Analyst; Deputy Director Tom Bright, and Ira Samuels, Associate Administrative Analyst, who spoke for the Department of Motor Vehicles. In lower right photo, George M. Webb, Traffic Engineer, front, and Emerson Rhyner, Attorney, who testified for the Department of Public Works.

Summary and Conclusions

SUMMARY

There are two almost completely different although closely related aspects of the total motor vehicle transportation problem. The first is concerned with the planning, design and construction of adequate highway facilities. Highway programs are based on anticipated economic development of the State. The growth of commerce and industry, the requirements of agriculture and forestry, the changing population patterns, and changing patterns of land values and land use must all be thoroughly considered in planning the future highway plant.

The second aspect of the problem concerns itself with the efficient operation of the highway plant after it has been constructed. The efficiency with which highway facilities are utilized not only is basic in improving safety, conserving life and property, and effecting economies in time, but also has a direct bearing upon future highway plant requirements. The more effectively the present facilities are utilized the more economies can be effected in planning future requirements, and the greater is the justification of investment in the highway plant.

The operational aspect of motor vehicle transportation concerns itself with the driver, his training, licensing and behavior; the vehicle, its maintenance and operation; the rules of the road, the system of traffic control, including signs, signals and markings, and the enforcement of traffic laws.

The second aspect has received less attention through the years than the first. It is understandable since the public demand and need for better highways have been both strong and evident. The public always has been aware of the highway problem. The public is not so aware, however, of the many problems attendant upon governmental regulation and control of motor vehicle ownership and use for the protection of property rights, and to safeguard and facilitate use of the vehicle and the highway.

Use Aspects Under Study

Passage of House Resolution 381 in 1959, calling for a thorough factual study of present and future requirements of the State's administration of motor vehicle affairs, was in recognition of the urgent need to prepare now for greater burdens of responsibility to come with continued growth of the State.

The study initiated under this resolution is essentially of long-range character, and is intended to provide a master blueprint for legislative action to keep pace with developments, as well as guidance to the department administrators responsible for the various functions bearing on vehicle ownership and use.

As organized and so far conducted, the study program provides for the adaptation in the field of motor vehicle and highway use of those techniques of long-range factual study and planning used so successfully in the highway program.

It was necessary that a study of such magnitude and complexity be approached step by step, in order that the process could be both orderly and thorough, thus assuring greatest possible measure of benefit. The three stages adopted:

(1) Fact-gathering, (2) analysis and evaluation, and (3) program development, are logical steps, and each requires deliberate, thorough and complete treatment to carry out the purpose and objectives of the study project.

The committee has been well aware that to give such thorough and thoughtful consideration to scores of subjects to be studied in each of the functional areas immediately involved requires considerable time in terms of days and man-hours, as well as the best efforts of those engaged in the work.

A Major Achievement

The first stage of the study program has been completed in the 1959-60 interim period, with all pertinent available facts gathered and assembled in usable form. In view of the limitation of time, and the many requirements of organization and planning, the committee considers accomplishment of the first stage of the work a major achievement toward the study goal. It is a notable start on a program which has tremendous potential of good if carried out to the fullest extent.

The Department of Highway Patrol has gathered all the facts relative to its overall function; the Department of Motor Vehicles on the functions of driver licensing, financial responsibility, occupational licensing and business regulation, and motor vehicle registration and titling; and the Department of Public Works, through its Highways Division, has assembled the facts on highway operations, which include all activities of the road-building agency to safeguard and facilitate traffic after the road is constructed and is put into service.

These were the functions chosen for immediate attention in the study program. The committee recognizes that all activities of state government in connection with the operation, ownership and use of motor vehicles must be considered eventually if a truly comprehensive review of governmental responsibility for management of motor vehicle affairs is to be accomplished. Several of the areas not now covered by the study program have been discussed by the committee and are treated briefly in the committee's conclusions, immediately following this summary.

It is the committee's firm belief that under the present plan of organization and procedure, the study now under way has the essential ingredients for successful completion. With legislative leadership, with participation of the administrative departments conducting the actual study work, and with the active co-operation of the public as represented by an advisory council of leading citizens, a real "team" effort is assured. The interest and participation of these groups have contributed immeasurably to success of the study work so far.

Ready for Analysis

With the first, or fact-gathering stage completed, the three departments, in which are housed the functions currently under study, are prepared to analyze and evaluate the factual data and other information they have assembled. The time required for this stage cannot accurately be estimated, but the process will be extremely demanding of both time and effort.

The second stage must be completed, of course, before immediate and future programs can be developed.

The committee wishes to point out that California is pioneering a study technique. Nowhere else in the United States have the subjects of motor vehicle ownership and use been subjected to scrutiny and analysis in such depth as the study here contemplates. The California Legislature can take pride in pointing the way to practical application of the factual study approach to problems of motor vehicle and highway use.

Interest in what is being undertaken here is high, not only in California, but throughout the states, many of which have indicated desire to explore application of the factual study plan to their own problems.

The value of such a study program depends, of course, on how thoroughly and completely the entire study process is carried out.

CONCLUSIONS

From the wealth of testimony and evidence made available to this committee, and in the firm opinion of the committee itself, the current factual study program is worthy of whatever time and effort must be devoted to accomplish it in its entirety. This opinion is shared by the committee's advisory council of prominent and knowledgeable citizens, to which the committee is deeply indebted for its unselfish service, and whose recommendations have been given full consideration in the committee's deliberations. It is reflected, too, in expressions such as the following:

Bradford M. Crittenden, Commissioner, Department of the California Highway Patrol—"The patrol considers the H.R. 381 study of prime importance to the future of its operations, and is determined to carry it out to the fullest potential of benefit to the department and to the people of California. We of the department believe the study program, as initiated by H.R. 381, is needed and should be continued."

Robert B. Bradford, Director, Department of Public Works—"It has come to my attention that the Assembly Interim Committee on Transportation and Commerce has completed its hearings on House Resolution No. 381 and is now preparing its report to the Legislature.

"The committee is to be complimented for its excellent work in developing stage one of the study. I sincerely hope that the Legislature will find it appropriate to carry on this important study to its completion, so that the final results of the extensive work which has now been accomplished will be realized."

Adding its voice to expressions of opinion on the factual study program, California's Advisory Committee on Motor Vehicle Legislation on October 6, 1960, unanimously went on record as recommending to the 1961 Regular Session of the California Legislature that the study embodied in H.R. 381 be continued.

In announcing this action, *William B. Cleves,* chairman, stated: "The members of the advisory committee recognize the substantial progress which has been made by the Assembly Interim Committee on Transportation and Commerce and the several state departments, in translating this study into meaningful action. We realize that a study of this magnitude was from the very beginning intended to be long-range in character. We are advised that the three-stage H.R. 381 study has progressed through stage one namely, 'fact-gathering' and that the second and third stages 'analysis and progress development' will be subject to future consideration. The Advisory Committee on Motor vehicle Legislation believes that this study has a tremendous potential for future improvement of traffic control and safety in the State of California."

Continuation of Study

In order that the people of California might realize the fullest value for every tax dollar spent in administration of motor vehicle affairs; in order that the Legislature and the departments might carry out their responsibilities in their assigned fields most effectively with the sure and full knowledge of facts that apply; and in recognition of the urgency of need, and the enthusiastic interest and support evidenced on all sides, the Assembly Interim Committee on Transportation and Commerce respectfully urges and recommends:

1 ***That the factual study of state functions bearing on ownership and use of the motor vehicle be continued in the 1961-1962 period under direction of an appropriate body of the California State Legislature, to give continuity to the carefully planned program already under way, and to assure that the necessary leadership and financing are provided to successfully carry out the full three-stage study plan.***

Research Needs

The attention of the committee has been directed to the fact that there are many problem areas in the field of motor vehicle regulation and control which cannot be solved because of the lack of adequate definitive knowledge. Pertinent facts in these troublesome areas must be developed through a program of research and study in depth beyond that which the current factual study program is capable of accomplishing within the time and facilities available. While much factual knowledge is, and will continue to be, gained in this study program, nevertheless some of the answers to vexing questions plaguing the Legislature and the departments must be provided through the process of research. Such research may be conducted by universities, institutes, foundations, and in some cases by departments of state government.

The need for such research transcends state lines and is common to every state. Thus, there is a strong feeling nationally that research projects in many fields of concern here should and must be undertaken in the public interest.

The United States Department of Health, Education and Welfare, and the Association of State and Territorial Health Officers, working with the American Association of Motor Vehicle Administrators, have agreed among themselves on areas in need of future research development. The President's Committee for Traffic Safety also has pointed out the need for research in a number of areas.

A report issued by the Highway Research Board of the National Research Council, National Academy of Sciences, in May of 1960, recommended expenditure of $34 million over the next four or five years for research into a number of areas of special urgency. Included was the field of motor vehicle administration, of which the report said:

> "The practices in the broad field of motor vehicle administration, including such features as driver licensing, motor vehicle registration, titling, enforcement, and associated functions, have not been developed as a result of thorough study of the desirable standards and practices in each aspect of the area. Rather, they have grown piecemeal as need for added functions in the area became apparent. A thorough appraisal of the problem in all its aspects and the development of necessary standards would permit the placing of motor vehicle administration on a sound realistic basis, with consequent improvement in control of vehicles and drivers in the interest of efficiency of operation and safety on the highway."

Among special research projects recommended in the Highway Research Board report were others falling within the areas covered in California's current factual study, including the following:

(1) Research into the effect of freeway . . . traffic controls . . . , on safety and efficiency of traffic movements; (2) intensive investigation by a team of scientists into features in the vehicle-road-driver relationship that can be isolated as the real accident causes; (3) determination of proper standards and warrants for freeway lighting; (4) development of a driving simulator to give greater flexibility to research of factors relating to driver performance, along lines of work already under way under direction of the Institute of Transportation and Traffic Engineering of the University of California, at Los Angeles, and (5) research into the electronic control of motor vehicles.

The Highway Research Board now is organizing and preparing for a research project in the field of motor vehicle registration and titling, which is expected to provide some of the answers to problems we have in our own State.

Many areas of real need for research and further study in California's administration of motor vehicle affairs are pointed out in succeeding sections of this report in which the three departments involved in the factual study tell of their functional activities and some of the problems they encounter.

2 ***The committee feels that promoting basic, competent research in the various areas and aspects of vehicular transportation is a most important objective, and that every reasonable encouragement to such research activities should be provided by the legislature.***

Accident Reporting and Records

The committee is impressed with the importance of accident reports and statistics as a source of information for the study of factors responsible for accidents, in order to assist in the development of accident prevention programs. Full and complete statistical data and other information gained from accident reports are the foundation upon which sound remedial programs are built. Testimony before the committee has indicated that in reporting of accidents, and in availability of accurate and reliable accident information, there are shortcomings to overcome for maximum use of this important safety instrument.

The accident report forms currently in use have not been revised appreciably for a number of years. Testimony has been presented to the effect that some of the information included in present reports is of no particular value, and much information which would be highly useful in promoting traffic safety is not now available.

The desirability of a thorough review of accident reporting and accident records, with a view toward improving their usefulness, has been urged upon the committee.

Accident reporting and the maintenance and use of accident records, considered for purpose of this discussion as a separate function of state responsibility, presently involves the three departments engaged in the current factual study. The isolation of this subject for special study, as a basic and highly important function, would permit detailed objective examination of its effectiveness and fundamental purpose.

The committee is convinced that accident reporting and records is a subject urgently in need of early attention through factual study comparable to that being accorded now to the six state functions presently involved in the study initiated under H.R. 381. By special arrangements through the current study organization, accident reporting and records could well be added to the study program.

3 ***The committee agrees that the present system of reporting is not of optimum usefulness, and accordingly recommends that competent authorities undertake re-examination of accident reports and availability and use of accident information, and that legislative leadership and encouragement be given to such efforts.***

Driver Education

The mass of evidence presented to this committee appears conclusive that driver education for youths of predriving age at the high school level, as provided now by existing law, is a good thing and should be continued under administrative direction of an agency of state government.

Some testimony has urged expansion of this educational requirement to cover both classroom instruction and behind-the-wheel training in actual driving skills for all eligible students. The question has also been raised as to availability of such educational instruction to students of private and parochial high schools in this State.

The committee recognizes the validity of scientific testimony to the effect that the driver—his habits, attitudes, skills and qualifications—is by far the most important single factor in causing traffic accidents. The social and civic problems caused by the incompetent and irresponsible driver present a challenge to the schools which is great and urgent.

Roy E. Simpson, Superintendent of Public Instruction, in a statement to the committee, said:

> "California requires driver education of all high school students. It also provides support for behind-the-wheel training. The effectiveness of this program is attested to by many groups, including the insurance companies whose interest is more than academic.
>
> "Whatever one may believe about teaching driver education in public schools, he must face the fact that it presently is the most effective and economical method. California public schools will watch with interest studies of this program for whatever improvements or changes they may suggest.
>
> "The major problems being faced in the development of driver instruction center around adequate financing of driver training, the use of instructors who are prepared to teach in the driver instruction program, and the scheduling of the classes by our schools in order to provide the time necessary to achieve a good educational offering."

The committee has been informed that reports on comparative studies conducted in a number of states indicate that youths given the advantage of driver education have appreciably better driving records than those who were not so taught. While such reports no doubt reflect a true general comparison on the basis of sampling surveys, it appears to this com-

mittee that there is need for more definitive, decisive and conclusive evidence on which to base assignment of values to various degrees and standards of such education and training, such as classroom only measured against the results obtained in combining classroom work with actual training in driving skill.

In considering this subject, the committee has made no attempt to determine proper placement of the function of driver education in state government. Evidence available to the committee on this question has been inconclusive.

4 ***This committee is sympathetic to suggestions that the driver education function be raised to its highest practical level of effectiveness. Preliminary to any such step, however, the committee urges that a thorough study of this function should be undertaken in further expansion of the current factual study initiated under H.R. 381.***

The Factual Study Program

Background

The history of the State of California has been one of progressive and healthy growth. This has been most notably true in the last 15 years, since the end of World War II, a period in which the State has experienced unprecedented rates of progress in all areas important to the social and economic well being of the people who live, work and play here.

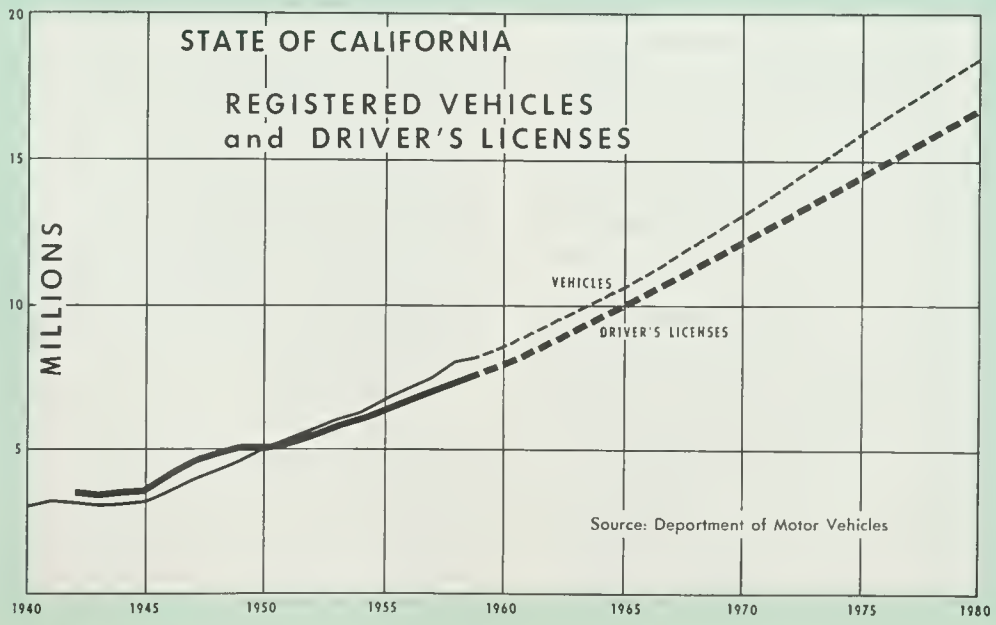
In that relatively short time, California's population has increased from 9.5 million to more than 15.5 million, a gain of some 6 million people. Through these years many problems have been met and solved, and still others are being dealt with, in providing for all our people adequate housing, health care, educational and recreational facilities, employment, and all the goods and services essential to modern life.

In this atmosphere of growth, one of the most important factors in development of human and natural resources to meet the challenge of the changing times has been, and will continue to be, the expansion of highway transportation. A nation, or a state, can grow and prosper only so fast and so far as it can provide for its people and economy the means of communication and transport conducive to growth.

If fullest possible benefit is to be derived from the highway transportation system, it must be adequate, efficient, safe and convenient to use. It requires constant attention to assure that its service keeps pace with the wants and needs of the entire State.

The current highway program is providing the type of physical facilities California is expected to need for years to come.

Highway planning and construction are carried out on the basis of long-range mile-by-mile engineering inventory to pinpoint physical needs. Traffic needs are forecast up to 20 years in advance.



Improvements are programmed on a priority basis in accordance with those measured needs. The program over the entire State is under constant review to keep it up to date and adequate, as current conditions and projections of need change.

Techniques for such studies, now widely used throughout the United States, were pioneered in California more than a decade ago under auspices of a joint interim committee of the Legislature.

Highway Use

The responsibility of government, however, obviously does not end with construction of better roads and streets. There remains the continuing responsibility to assure that *use* of the motor vehicle and the highway plant is efficient, safe and convenient.

As was pointed out in this committee's progress report on H.R. 381 during the 1960 Session of the Legislature, a large measure of responsibility for safe operation of motor vehicles rests with the individual citizen. But, it is necessary to enact rules of the road and to enforce them; to regulate vehicle ownership and driving privileges; to educate youth in safe driving practices, and to provide efficient engineering controls for traffic, such as signs, signals and markings. These are major functions of state government.

Problems in these areas of governmental responsibility have grown and multiplied in pace with increases in population, numbers of motor vehicles and drivers, and the constantly rising travel mileage. There is every reason to expect the burden of responsibility on government to get heavier and more complex as time goes on.

Authorities see continuation of dramatic growth, forecasting that in the next 20 years California's population will be double that of today. Motor vehicle registration, which today stands at 8.5 million and is by far the highest among states of the nation, will reach more than twice that figure by 1980. The number of licensed drivers will increase in about the same proportion. Mileage of vehicle travel will be almost tripled. Such growth in these and other fundamental factors will determine the size of the job to be done in the years ahead.

It is worth pointing out here that experience of the past has shown future forecasts usually fall short of actuality, so that the above estimates may be more modest than extreme.

If California hopes to achieve a balanced future development of highway transportation service, this committee is convinced that much more attention must be directed to *use* aspects of the overall problem. This committee subscribes to the opinion that right now we are in somewhat the same position with respect to regulation and control of motor vehicle and highway use as we were more than a decade ago in construction and financing of modern highways. The need in the area of use now is most urgent.

Unlike the problems of highway construction on which are brought to bear the physical sciences and proved engineering techniques, the problems of highway use cannot be approached with such exactness for they are largely of human character and as varied and complex as the makeup of people. Regulation and control of the individual in his own interest, and for the protection of the general public, is a large and complicated task requiring the best thought and judgment of all the responsible agencies of government.

House Resolution 381

The California State Legislature long has recognized that advance preparation for the future not only is logical but essential if government is to keep pace with evolutionary changes and the shifting needs of the people over the years. The success of such preparation depends overwhelmingly on how well the Legislature is informed on current as well as anticipated future conditions, problems, means of solution, activities and needs of administrative departments, wants and needs of the people, and other pertinent facts basic to sound and intelligent legislative action.

We who have the honor to serve as legislators want to act on all matters with the assurance of full and complete knowledge of facts that apply. This is the case now as attention turns to the many-faceted subject of motor vehicle ownership and use.

Certainly, the concern of the Legislature, and the urgency of need to search out the facts on which to base planning and a far-seeing legislative program, is reflected in passage of House Resolution 381 in the 1959 Regular Session.

This resolution, the text of which is reproduced on an earlier page of this report, called attention to the need to cope with problems of *use* as diligently, as thoroughly and as factually, as the State has dealt with the problem of highway development. It recognized that deficiencies and inconsistencies in motor vehicle laws may have resulted from lack of an overall approach, comparable to that adopted in the highway field. It was pointed out, too, that state difficulties in dealing with problems of motor vehicle administration could well lead to unwelcome activity of the federal government in such matters which traditionally and rightfully are the responsibility and prerogative of the State. Further, it called attention to the fact that basic issues of state transportation policy are involved in the provision of service, the control of privilege, and the exercise of police power in administration of motor vehicle affairs.

In essence, H.R. 381 called for a study which should include: (1) inventory of all state functions pertaining to operations on the highway plant and administration of motor vehicle affairs, with determination and evaluation of their purposes and objectives, and (2) estimates of future needs to assure effective and economical performance of these functions, and means of achieving their proper purposes and objectives.

When the Assembly Rules Committee assigned this subject to the Interim Committee on Transportation and Commerce, the interim committee was fully aware of the importance of the task and the grave responsibility it carried with it. The interim committee welcomed the assignment, seeing in it the opportunity to pioneer in a field which so far has not received this kind of thorough and comprehensive treatment anywhere in the United States.

The H.R. 381 mandate has made it possible to lay the foundation for a master blueprint to guide future legislative and administrative action. It has provided a *start* for application in the motor vehicle field of the techniques of factual survey and long-range planning used so successfully in the highway program.

Purpose and Objectives

Upon assignment of responsibility for carrying out the mandate of H.R. 381, this committee prepared a statement of purpose, and set out study objectives, so that all study activity might have clear direction, and progress toward common goals.

Guided by the wordage of H.R. 381, the committee adopted the following statement of purpose:

> **"To enable the Legislature — in keeping pace with the dynamic growth of the State of California—to come into possession of all the facts relating to motor vehicle ownership, operation and use, thereby permitting it to exercise its full responsibility in providing funds and authority to the responsible officials in order that *use* of highways and streets now built, or being built, will adequately serve the needs of the people efficiently and safely, both for the present and in the future."**

The ultimate objectives:

> **"1. To make it possible for the several departments to determine the extent of their future responsibilities in each functional area. This would be a factual and quantitative measurement of what each function must be geared to accomplish in the years ahead under impact of continued growth of the State.**
>
> **"2. To evaluate each function and its proper role in state government, to the end that a better common understanding and appreciation of its purposes and objectives might be realized by the Legislature, the public, and the officials themselves. This would be a qualitative measure of each function, to point up the value of its services, and how it can be made more effective."**

Cognizant of the fact that many activities of state government had direct or indirect bearing on ownership and use of the motor vehicle, some of them being mentioned specifically in H.R. 381, the committee nevertheless recognized that to attempt a study in depth of all these areas at once not only would be a monumental task, but would spread the effort over so wide a front as to do a disservice to any one of the subjects. Each subject was considered deserving of the maximum attention it was possible to give.

Scope of Study

It was deemed desirable to hold the initial study program to a manageable size, taking first some of the major functions having direct impact on the motor vehicle owner and user. The following functions were chosen for early attention:

Driver Licensing, Financial Responsibility, Highway Operations (mainly the engineering activities of the road-building agency to safeguard and facilitate traffic movement after a highway is put into service), Highway Patrol, and Registration and Titling of Vehicles. Subsequently, the function of Occupational Licensing and Business Regulation was added to the program since it was related to the other functions within the Department of Motor Vehicles.

Philosophy Applying

A basic belief inherent in the thought and purpose of H.R. 381, of course, is that whatever is done legislatively, or administratively, to improve the governmental performance and conditions affecting ownership and use of the motor vehicle, must be founded solidly and sensibly on the bedrock of complete and thorough knowledge of facts. For only then can it be assured that measures taken are in fact in the best possible interest of the people of the State.

First approach is to the law to assure that legal provisions are not only sound and up to date, but also flexible enough to keep pace with new developments as time goes on. Secondly, is the responsibility of the Legislature to take periodic stock of what is being done under the law to make sure the laws are serving their intended purpose, and to evaluate the impact those laws are having on the people of the State, and on the administrative agencies of government.

California's motor vehicle laws were last given thorough review as part of a study of motor vehicle traffic problems conducted by this committee, pursuant to House Resolution 216, passed by the Assembly in 1955. The committee made its report to the Assembly in March of 1957, including the recommendation that the motor vehicle laws be recodified.

During those years of study, the Uniform Vehicle Code, nationally recognized standard for uniform laws in that field, was used as a guide for the committee's proposal. The Uniform Code, which is revised periodically, is being used again in the study under H.R. 381 to recognize any changes which might have bearing on our own developments.

The H.R. 381 study program has been approached with the thought in mind that government is "of the people, by the people, and for the people," as Abraham Lincoln said many years ago in his memorable Gettys-

burg Address. This means, simply, that the committee has placed emphasis in this study of functions on the positive side of service, or what is being done *for* people, rather than on what the law and its administration can do *to* people through regulatory and enforcement powers.

It is recognized, of course, that enforcement of laws, rules and regulations governing ownership and use of motor vehicles must, of necessity, lead at times to corrective or punitive measures. It should be more widely known, however, that whatever is done along that line in any of the functions involved in this study is done solely in the public interests; for the protection of the public against unlawful or unwise acts of those individuals who will not, cannot, or fail to conform.

It is hoped through this study process, with emphasis on positive and helpful service, to help keep self-government and its agencies in proper perspective in the public view. Wide dissemination of factual information, such as has already been made available through the H.R. 381 study, will do much to achieve this end.

Organization

The success of any study of such magnitude and technical complexity depends largely on the thoroughness with which it is planned, organized and conducted. It is true also that such study must be carried out by people who are competent and qualified by reason of training and experience in each of the areas to search out pertinent facts, and analyze and evaluate them in terms of study objectives.

An early step of the committee was to enlist the assistance and participation of the three departments of State Government responsible for the functions being considered. They were requested to review the subject matter of H.R. 381 and to suggest to the committee the scope of studies which could be expected to produce beneficial results. These departments are the California Highway Patrol, the Department of Motor Vehicles, and the Department of Public Works.

The committee, from the beginning, has received the full co-operation of these departments, and takes this opportunity to again express publicly its great appreciation for their spirit of helpfulness, and the tremendous amount of exacting work they have already accomplished in their respective study roles.

The study organization, although of simple structure, has brought into the program three essential ingredients for success: legislative leadership, public participation, and co-operation of the responsible administrative officials. Thus, the viewpoints, experience, counsel, and judgment of all three groups have been contributing to progress and value of the study.

The committee, being directly responsible for the study, has been the policy-making body, and has maintained close liaison with the departments.

An advisory counsel, working with the committee, includes in its membership prominent and leading citizens with interest, knowledge and experience in highway transportation matters. This group has been invaluable in its advisory capacity. It is worthy of note that many on that council were early supporters of the principle of H.R. 381, even before it was in draft.

The three departments voluntarily assumed responsibility for the actual study work, and have kept the committee informed on their progress. All technical phases of the study are in their hands. Each developed detailed study outlines covering all their respective areas of responsibility and activity to guide the work of staff assigned to the study project.

It was agreed from the outset that the departments would draw their own conclusions from findings of the study, and at the proper time in the study process submit their recommendations to the committee. These departments have worked closely together on matters of mutual concern, and through such interagency co-operation have smoothed out jointly many of the details of organization and study.

Completing the study organization, the Automotive Safety Foundation, of Washington, D.C., accepted the committee's invitation to act as study director, as an agent of the committee. The foundation is a non-profit organization dedicated to education and research for safe and efficient highway transportation, and is supported by more than 600 companies and associations in 14 industries.

The Study Plan

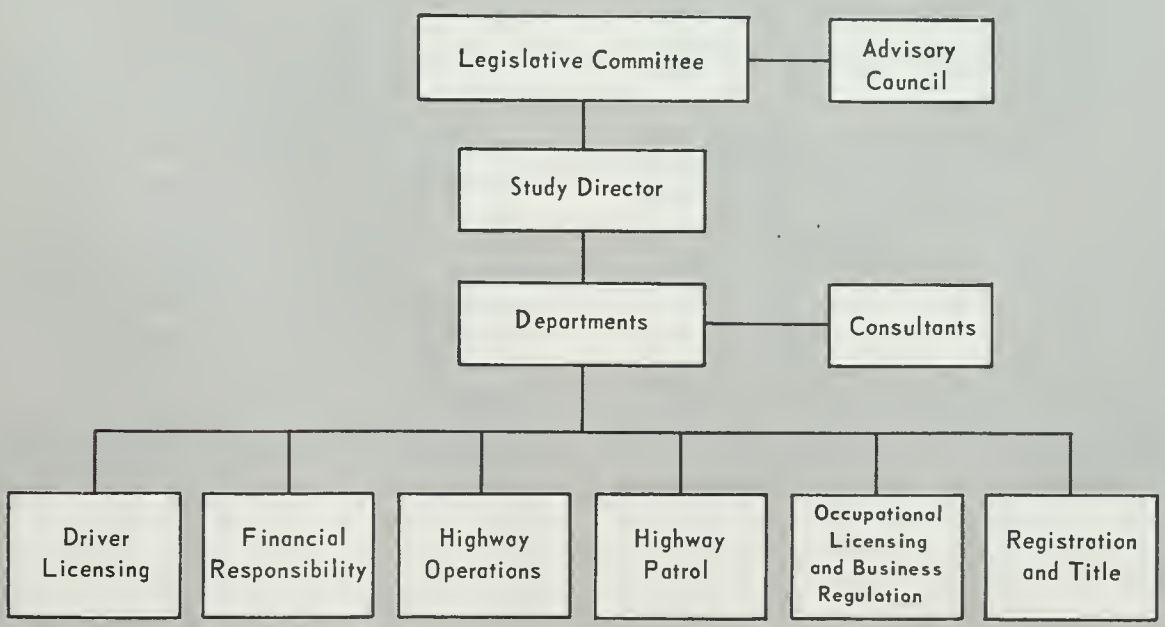
To assure thoroughness and orderly progression of the work, it was mutually agreed by all concerned that the study would be undertaken in three stages:

1. **FACT GATHERING. Factual inventory of current activities of each function to get a clear picture of what is taking place in carrying out the law. Review of evolutionary development to determine how each function reached its present status. Assembly of all essential facts relating to legal authority and functional responsibility.**
2. **ANALYSIS. Analysis and evaluation of facts in light of study objectives. Application of available standards and criteria to determine whether the function is performing at the desired level of adequacy. Development of standards and criteria where lacking. Determination of what is required to equip the function for effective service.**
3. **PROGRAM FOR IMPROVEMENT. Development of a long-range improvement program for each function, spelling out priorities of need, as the ultimate goal of the study program. Drafting specific recommendations for legislative consideration, including both current needs and those anticipated for the future, to provide a master blueprint as a guide to the Legislature.**

Photo by Department of Highway Patrol

Here are some of the personalities in the three departments concerned who have been active in direction and conduct of the factual study initiated under House Resolution 381. *Top row, left to right,* are Fred J. Bly, Assistant Commissioner; Bradford M. Crittenden, Commissioner; Russel R. Magill, Deputy Commissioner; Captain D. A. Watkins, and Captain Harold K. Jacobs, all of the Department of Highway Patrol. *Lower row, left to right,* are Tom Bright, Deputy Director; Ira Samuels, Associate Administrative Analyst, and Abe Osofsky, Senior Administrative Analyst, of the Department of Motor Vehicles; and George M. Webb, Traffic Engineer, Division of Highways, and Emerson W. Rhyner, Attorney, Division of Contracts and Rights of Way, Department of Public Works.

ORGANIZATION CHART (Studies in Progress)



Facts Being Considered

Facts considered throughout the study process include not only those which relate to statutory authority and assignment of responsibility, but also internal administrative factors over which a department has decision, as well as external factors over which the Legislature and the departments have no control.

Among internal factors are administrative policies and practices, personnel and training, equipment and facilities and interagency co-operation. Among external factors are population trends, traffic accident experience, number of vehicles registered, number of drivers, and characteristics and trends in motor vehicle use. These matters are being studied for their meaning and impact on performance of each function.

Objective Analysis

To realize the fullest possible value from a study of this kind, the committee's study plan calls for the analysis stage to be approached with complete objectivity, with suggestions and constructive criticism welcome on every matter being considered. This is the time to bring into the work as much imaginative thinking and fresh viewpoints as can be enlisted, especially in view of the second of the ultimate objectives, the qualitative measure of the function and its proper role in government.

Opening up matters of policy and major operational problems by the departments to such broad review is a way toward better understanding of each function and its needs, and should result eventually in stronger public support than might otherwise be realized.

Committee Activities

The Assembly Interim Committee on Transportation and Commerce, with the assistance of the study director's staff, and with the co-operation of the departments, developed and distributed materials to inform those interested on what the study was, what it was to accomplish, and how it was being carried out. Other materials were prepared as guidance to the departments to bring about a practical degree of uniformity in their approaches to the study work.

The committee submitted to the Assembly Rules Committee a printed and bound interim progress report in March of the 1960 Session of the Legislature.

The committee has been gratified at the interest in its work and the study project evidenced in California. Demands for materials and other information have been heavy on the committee's office.

Indications of nationwide interest in what California is doing, is seen in resolutions, supporting the principle of the factual study approach, adopted previously by several national organizations. Such resolutions have been passed by the American Association of Motor Vehicle Administrators, the International Association of Chiefs of Police, the Institute of Traffic Engineers, and the Western Interstate Committee on Highway Policy Problems, a regional body of the Council of State Governments. The President's Committee for Traffic Safety also has given active support to such factual study of needs.

Here at home, the California State Chamber of Commerce, through action of its board of directors, gave formal endorsement to the study program, adding its voice to the widespread institutional support this work has received throughout the State. The chamber's action followed a presentation on this subject to the chamber's Statewide Highway Committee.

In presenting the matter to the board, *F. W. Tarr*, chairman of the chamber's Highway Committee, said in part: "It is essential that concerted attention and study be given to motor vehicle functions other than the financing and engineering of the physical highway plant if maximum service is to be rendered to the people of California."

Public Hearings

The committee held public hearings on H.R. 381 in San Francisco on August 25, and on October 15-16, 1959, and in Sacramento on January 26, and on August 9-10, 1960. The committee held three executive sessions. The final one was with the advisory council, September 13, 1960, in Sacramento to discuss matters relating to this report, and the recommendations the committee would make to the Assembly.

At the public hearings, many witnesses presented testimony. They included officials of the departments involved, and others representing organizations and associations throughout the State interested in highway transportation matters.

The interest and spirit of co-operation the departments have shown in the study project are reflected in statements made to the committee in presenting their testimony and reports on their administrative activities.

The testimony of prominent citizens speaking at the hearings in behalf of organizations representative of many areas of this State's social and economic structure, was unanimously and enthusiastically in support of the study program and the committee's work. There were no dissenting opinions. This support was documented in quotes from many of these people in the committee's 1960 progress report under the title, "Motor Vehicle Use, Ownership, Operation," already on file with the Assembly Rules Committee.

Following are some typical expressions:

Witnesses appearing at committee hearings made clear the potential benefits which can be expected ultimately to result from a full-scale study program. For example, *Harmer E. Davis*, Director, Institute of Transportation and Traffic Engineering, University of California, pointed out their importance in terms of transportation economics:

"If we are going to remain a prosperous State, we can't afford to have our cost of transportation get out of bounds. I think a good way to look at it is to draw a parallel with a manufacturing industry. If the companies in it are to remain alive, they will have to meet new demands. They will have to add subdepartments, replace obsolete machinery, keep up to date on

office methods, perhaps set up different kinds of cost controls.

"If all they do is patch this up, add that, build a new wing on a building, perhaps buy another machine, the overhead gets pretty costly. Finally, they can't compete any more. This is a basic economic reason why it's important to get started on this kind of a study now. The demands for movement certainly will be increased. We can project these overall demands easily; the question is, how to meet them. It's not an easy thing, it's a big and complicated job. Let's get at it."

As *Richard M. Zettel*, Economist, Institute of Transportation and Traffic Engineering, University of California, pointed out to the committee: "We are in pretty much the same kind of position now with respect to these functions as the State was 13 years ago in construction and financing of the highway system. I think perhaps this field is more difficult in some ways because it is more nebulous and you are dealing with more people. The problems . . . will be enormous. But the need is great. I think it is necessary to get a start on this; to attempt to get a grasp of the total picture, to see if we can't make the system operate with efficiency, economy and safety."

Benefits which can be expected in terms of making available facts essential to sound legislative and administrative policy were well summarized in a statement by *Earl F. Campbell*, Managing Director, California Traffic Safety Foundation, who spoke also for 10 metropolitan traffic safety organizations serving four-fifths of the State's total population:

"With such facts, measurements and evaluations, the Legislature will be in a position better to carry out its responsibilities relating to formulation of public policy on motor vehicle laws and administration, and financing the needs of state departments and functions concerned. The departments of state government thus may be guided in their operations and recommendations by comprehensive, inter-related data not heretofore available."

Speaking at that time for the League of California Cities, *Gordon Forrest* said that "the cities are extremely interested in the work of this committee, and feel that the studies are very important. Cities are particularly interested in some aspects of it, such as traffic safety, intergovernmental relationships and traffic laws."

Ray Ashworth, Director of Field Services, International Association of Chiefs of Police, told the committee that progress on these studies in California will be watched closely by other states throughout the country:

"Sometimes you have to take a look back; then you have to analyze where you are, how you got there, and where you are going. Have you just been chasing a problem rather than controlling it? If that is the fact, how can you really get in control of it, in some specific time? I think this study is going to be a continuing thing. It should be, if properly set up. But eventually it will put you in a position, I think, where you can exert some real control, not only in reduction of accidents but in much better traffic flow and movement. This thing simply makes sense."

The organized motorists of California offer strong support and encouragement. *Harry V. Cheshire, Jr.*, General Counsel, Automobile Club of Southern California, said: "I wish to get into the record of this committee an expression of the support of our organization for the type of study which this committee is undertaking. . . . From the inception of the idea for House Resolution 381, we have supported the study. We think it is absolutely essential, and we think that you are going to have to have more support for your committee in this work. Certainly, we stand ready to give whatever support we may be able to furnish."

Speaking for the California State Automobile Association, *J. C. Spencer*, General Manager, said: "We feel strongly that in order that the people of California may secure the maximum benefits to come from motor vehicle transportation, a thorough study should be made of the administration of all motor vehicle affairs as is proposed in that resolution (H.R. 381). To that end, we pledge our full support and assistance."

Status of the Study

From the beginning, the committee has been impressed with the seriousness of need for study in real depth of all matters relating to each of the functional areas involved, as well as the need for moving forward carefully throughout the study program. Experience so far in this work has strengthened the committee's conviction that the study is worthy of whatever time and effort it may take to give thorough and deliberate treatment to every subject, sub-subject, and activity within each of the functions.

Anything less than thoroughness in matters of such importance would be a disservice to the State. Hasty decisions, based on hurried and incomplete analysis, not only would distort the facts needed to guide the Legislature, but would effectively defeat the purpose and objectives of the factual study program.

Therefore, the committee adopted the policy of deliberate approach, a policy to which the departments have subscribed in their work, and one which the committee felt sure would meet the approval of the entire Assembly.

Because of this decision, which the committee believed to be in the best interests of the State and its people, it was evident that the committee's efforts in the interim period must be concentrated first on laying the foundation for a thorough and complete study program from which maximum benefit could be derived.

During the two-year interim period, 1959-1960, therefore, this committee concerned itself primarily with organizing the study for most effective management, getting the project under way on the soundest possible footing, and making it possible to accomplish as much of the actual study work as was permitted by the limitation of time. Results of the work so far have borne out the soundness of this approach.

As the committee discharges its obligation under H.R. 381, with submission of this report, the committee is satisfied a proper start has been made on a project of major importance.

First Stage Complete

The study program has been taken through the entire first stage, with all essential and pertinent facts gathered by the departments and assembled in usable form. This took many man-hours of work, and months of time, in the desire of the departments to do a thorough and complete job in each technical area.

The result of the departments' work in this first phase of the program was made known to the committee and advisory council in presentations on each function, made by the departments at the final public hearing last August 9-10 in Sacramento. The officials representing these departments told what they were doing, how they were doing it, and why; discussing also some of the problems of administration. Each department also submitted a comprehensive printed report.

It is interesting to note that, in the assembly of facts, the departments have said they already have found the information of value in their administrative planning. They see in this wealth of information additional value as a training aid for staff people, as well as a reservoir of facts to use in their public information programs.

In succeeding chapters of this report, the departments tell the story of their respective functions, based on their testimony at the hearing in August of 1960.

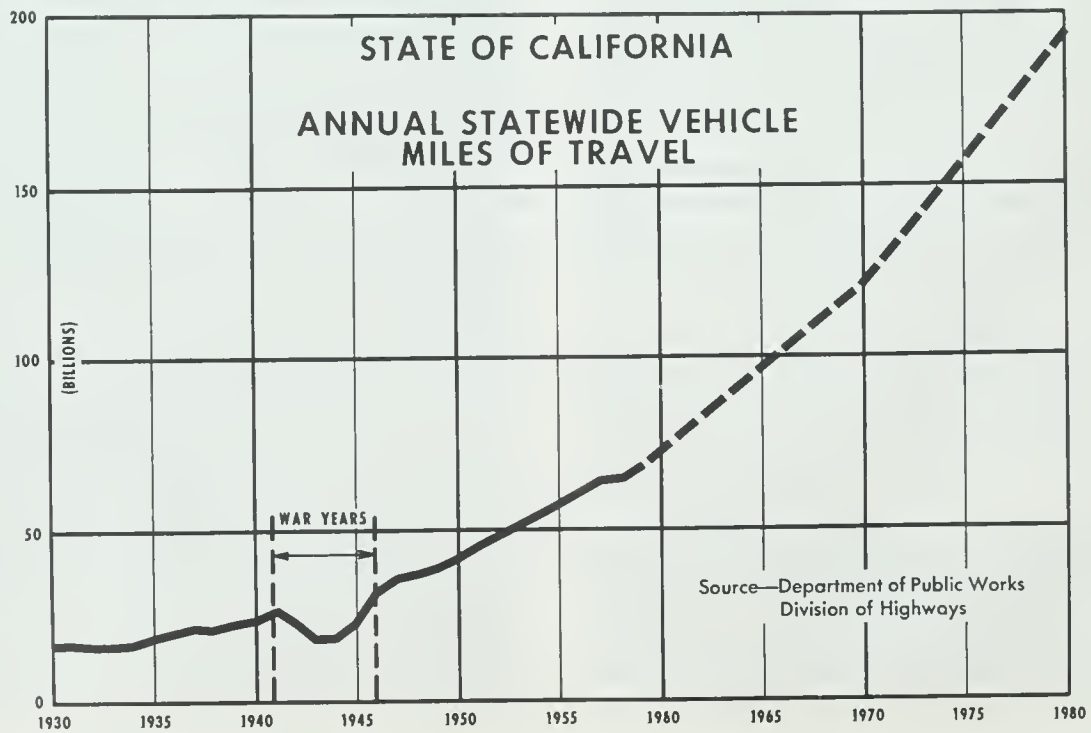
The Work Ahead

The potential of the study program actually is just now beginning to show itself. The most productive and valuable work of the project still lies ahead. Gathering of all the facts was an essential and basic part of it, but until those facts are thoroughly analyzed as to their meaning, and evaluated in terms of their impact on the function, they remain only interesting facts.

Some analysis has been undertaken by the departments, but it has been just a start. There are many facets to the provisions of law, and to administrative responsibility and activity in each of the functions under study. While the time required to complete the analysis stage cannot at this time be predicted, it is certain that detailed and thoughtful scrutiny of every one of the scores of subjects relating to every function will take months, rather than days.

There remains, too, the attainment of the goal to which the study work is directed, the development for each function of a long-range improvement program, as a guide to immediate and future action of both the Legislature and the responsible department.

The committee feels it should point out that, as has been true in the highway field, improvement programs finally evolved from such a study process must of necessity be reviewed periodically, to keep them up to date and apace with anticipated future problems, as the passing of years makes it possible to see farther and farther into the calendar.



Highway Operations

From testimony by Emerson W. Rhyner, Attorney, Division of Contracts and Rights of Way, for Department of Public Works

Because the location, financing and construction of highways and freeways have a profound effect upon the citizens of this State and are readily apparent, most people are cognizant of the activities of the Division of Highways, Department of Public Works, in these fields. Such activities encompass the major operations of the Division of Highways.

The public is probably less aware, however, of other functions of the division which, though not as extensive in nature, are of the utmost importance to motorists. These are activities devoted to making the state highway system safer, more convenient, and more efficient in its use by the traveling public.

The activities of the Division of Highways in connection with operation of the highway plant are largely found in its traffic department and the permit section of its maintenance department. These activities can be generally described as follows:

1. Analysis of accident reports to pinpoint hazardous locations and conditions needing remedial attention.
2. Placing and maintenance of pavement markings.
3. Signing of state highways.
4. Speed zoning of state highways.
5. Placing traffic signals and highway lighting.
6. Taking traffic censuses.
7. Imposition of other general traffic regulations.
8. Dissemination of road information.
9. Issuance of permits.

These functions will be described in the order listed above.

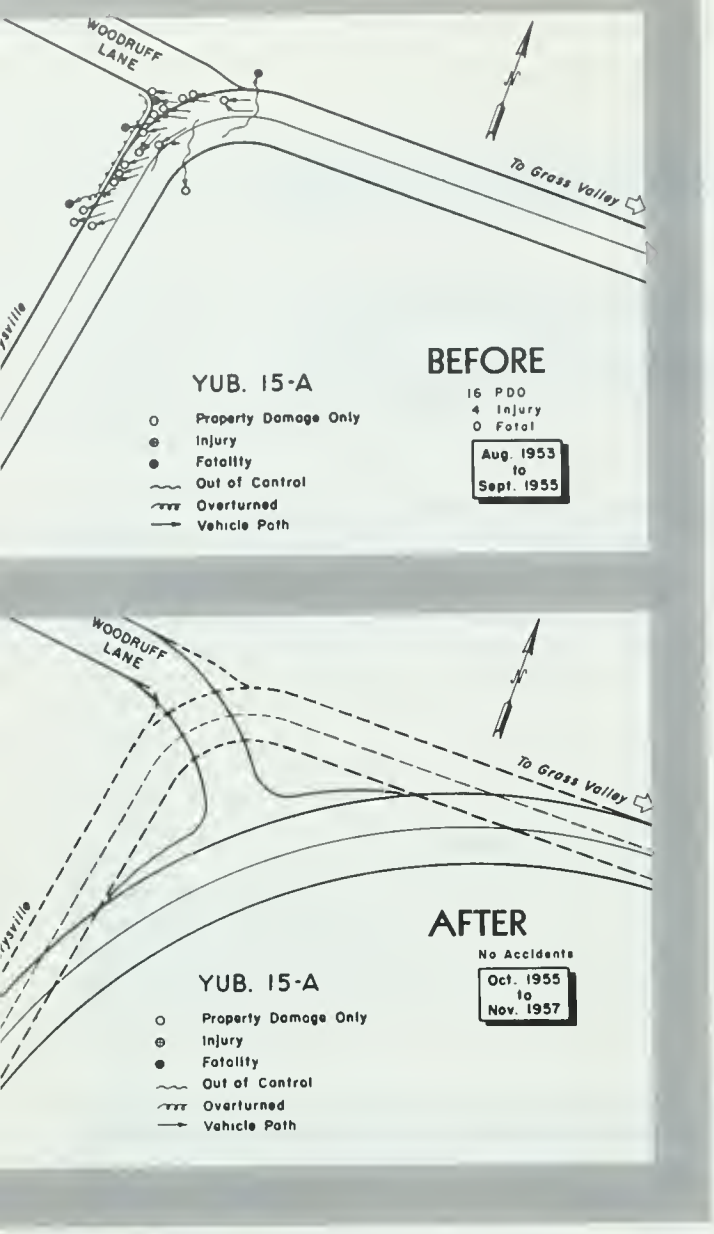
Accident Reports

Safety is one of the primary considerations in the operation of highways. The Division of Highways depends on accident reports to furnish basic information required to measure the safety of state highways.

Under existing law, the division receives copies of all reports of accidents on state highways which are prepared by, or sent to, the California Highway Patrol. Excellent reporting is obtained for those areas patrolled by the Highway Patrol, which generally are outside the limits of incorporated cities. Cities also are required to forward motorists' reports of all accidents involving injury or death, to the patrol, and copies of these reports are transmitted by the patrol to the Division of Highways. In addition, the reports of all accidents on state highways within the limits of incorporated cities are requested from those cities in which police routinely report accidents.

All reported accidents are spotted on accident "profiles," or index cards, which are simply logs of the highway showing the position of identifying features such as intersections, structures, and city limits. These logs point up the locations which are developing a concentration of accidents.

The accident reports at these locations are analyzed to determine exactly what happened. This analysis points out the basic accident patterns which, in turn, determine the corrective measures which will alleviate the accident problem. After correction has been made, the location is watched to determine the effectiveness of the specific corrective measures taken.



These "before" and "after" accident diagrams demonstrate how effectively engineering correction can be applied to problem locations. Accurate and complete accident information is needed to guide such remedial measures.

Accident records are combined with traffic volumes to determine accident rates for each of the 1,825 sections of highway in the rural state highway system. These rates provide a measure of the relative safety of each section or segment and are important considerations in the budgeting of improvements. They also provide a means for spotting segments which are becoming safety problems.

Accident reports are used also to aid in measuring the safety of existing highway design standards, through the process of formal or informal investigation. Design standards are constantly reviewed and improved, but no change is undertaken without referring to the available accident information to determine the influence such change will have on the safety of motorists using the highways.

Report Volume Up

The number of accidents reported on the rural state highway system increased from 8,174 in 1936 to 37,640 in 1959. A part of this increase is undoubtedly due to more complete reporting of accidents which involve only property damage. This is illustrated by the trend in injury accidents (for which reports are required by law) during this period.

These figures do not include those accidents which occurred on state highways within the limits of incorporated cities. At the present time, accident reports are received from 218 of the 332 incorporated cities containing state highways. During the first seven months of 1960, there were 20,000 reports of accidents on state highways within the limits of these cities.

The recent freeway and expressway statute contemplates that a substantial portion of the 12,000-mile freeway network recently adopted by the Legislature will be completed by 1980. On this basis, and assuming the same level of accident reporting, it is estimated that by 1980 there will be approximately 93,000 accidents reported on the rural state highway system with 170,000 reported on the entire state system.

Procedures for handling and processing these reports are constantly being reviewed and improved. The most impressive improvement is the growing use of machine tabulating procedures which have increased the usefulness of the information, yet reduced the cost. For example, one routine tabulation lists the accidents for each one-fourth mile segment of rural state highway, in order, by number of accidents. This tabulation provides another means of readily spotting locations with safety problems.

Reports Prove Value

From the standpoint of public benefit, there is no doubt that engineering use is one of the most important uses of accident reports. The cumulative effect of corrections at accident locations, and the expanding mileage of freeways and expressways, are providing great improvement in traffic safety. The fatality rate on state highways has substantially declined per vehicle mile since 1945, and this can well be due in part to the effectiveness of engineering for traffic safety. With the present freeway construction program, this trend probably will continue.

Special "before and after" studies have demonstrated the safety of freeway design. The accident rate on the State's full freeways has consistently been about one-half, and the fatality rate about one-third the rate on conventional rural highways. Two of these studies covering a section of US 40 between Sacramento and Roseville, and a portion of US 99 at Fresno, were considered particularly significant as the old highway remained in use after new construction. In each case, the total number of accidents on the old highway and freeway combined were significantly lower than the number of accidents on the old highway before construction of the freeway, although the total traffic volume increased.

In the first case, the combined freeway-old highway accident total in the 22-month period following construction of the freeway was 216, a reduction of nearly one-half from the 418 accidents on the old highway in the 22 months preceding construction. In the second case, the number of accidents was cut from 461 on the old highway in the 12 months before construction of the freeway to 213 on the freeway and old highway combined in the 12 months after construction.

More Information Needed

The following requirements would be of the utmost aid in making highways safer for motorists:

1. Complete and uniform reporting of accidents.
2. The availability of the accident report to the engineering staff having jurisdiction over the highway.
3. Adequate information on the accident forms regarding the accident.

A particular location might be an accident problem and yet have relatively few accidents which actually involve personal injury or death. To determine the location of accident concentrations and to make the best engineering analysis of them, it is desirable to obtain a report of all the accidents occurring at that location, including those which involve only property damage. Often the difference between property damage and injury in an accident is sheer chance.

During the past few years, an average of 60 percent of the accidents reported on the rural state highway system involved only property damage. Except for those involving parked vehicles, reports of these accidents are not required by law, but are made voluntarily by the California Highway Patrol on highways over which it has jurisdiction.

The lack of accident information from incorporated cities is a serious handicap, which the division is attempting to overcome by requesting their co-operation. It is estimated that 42,000 accidents occur annually on state highways in cities, illustrating the importance of the urban reporting problem.

Uniform reporting of accidents is essential in ensuring the maximum benefit from the highway dollar in the budgeting and programming of both major and minor improvements. For this purpose, a standard for reporting, such as a minimum specified amount of property damage per accident, is highly desirable. In addition, to being of real value in the location of the accident and in engineering analysis, the accident report should be made by a trained police officer. Sections 10-107 and 10-110 of the Uniform Vehicle Code, nationally recognized standard, are examples of legislation meeting these requirements.

Must be Available

To be used for accident analysis, of course, the reports must be available to the engineering staff having jurisdiction over the highway. At the present time, all "reportable" accidents occurring within the State must be reported to the California Highway Patrol, and are available for the confidential use of the Department of Public Works. If extension of the reporting requirement is made, the availability of more and better accident information would ensure proper engineering analysis.

A uniform form for accident reports is very desirable, in that it facilitates the processing of accident data and, more importantly, aids in securing adequate information on each accident. Simplifying the processing of reports permits the ready compilation of information and increases their usefulness.

Some cities have very good forms with excellent reporting. Other cities, however, use forms which are in some instances so incomplete as to be of very limited value in an engineering analysis. In some cases, it is even impossible to accurately locate the accident. In contrast, the Highway Patrol accident form, the result of a revision in 1956, includes all information required by the patrol and the Division of Highways. The patrol report has been found very adequate.

Section 1-113(b) of the Uniform Vehicle Code provides that all required reports shall be made on appropriate forms approved by the departments. The California Vehicle Code does not specify the type of form but does provide that the patrol shall furnish forms for required reports to police agencies on request.

Pavement Markings

Pavement markings have definite functions to perform in a proper scheme of traffic control. In some cases they are used to supplement the regulations or warnings of other devices, such as traffic signs or signals. In other instances they serve as a very effective means of conveying regulations and warnings that would not otherwise be clearly understandable.

Pavement markings may be used only in certain situations, as they have definite limitations. They may be entirely obliterated by snow, are not clearly visible when wet, and have limited durability when painted on surfaces exposed to traffic wear. In spite of these limitations, they have the advantage under favorable conditions that they can convey warning or information to the vehicle driver without diverting his attention from the roadway.

Available records indicate that the first white center line stripe placed in California was on the concrete pavement between Los Gatos and Santa Cruz in the summer of 1922.

Expenditures for pavement markings on state highways increased from $1,078,804 in 1954 to $1,927,216 in 1959.

There have been several relatively recent developments in markings or substitutes therefore. Thermoplastic traffic stripe is finding increasing use at locations subject to excessive traffic wear, such as crosswalks, stop bars and word or symbol markings in the

traffic lane. Although relatively more expensive, experience has shown the service life to average eight applications of headed traffic paint. Use of this material has been found to be economical at locations that require repainting twice a year. A further advantage is the reduction in operations which interfere with traffic.

The other development is the raised plastic reflective markers four inches in diameter and three-fourths inch high, used in lieu of the traffic stripe. The use of four markers in place of the nine-foot traffic stripe is considered slightly less effective in daylight, more effective at night, and fully effective in heavy rain. When installed in quantity, these markers will cost approximately 10 times the cost of a painted lane line. However, with the first installation still serving after five years, these markers may provide a sufficiently permanent installation to prove economical in the long run.

It is anticipated that pavement marking expenditures will increase at a slightly faster rate than total highway expenditures, or require an increasing percentage of the state highway budget. This is because the cost of markings on each added lane and each added mile must be compounded in the annual or biannual repainting.

Valuable to Safety

The center line stripe which separates areas for meeting and passing vehicles has long been acclaimed by traffic and safety experts as the greatest single contribution to traffic safety. Lines which assign the traffic lanes are essential to the safe and efficient operation of high-volume freeways and other multilane roads. The broad V-stripe in advance of freeway exits improves the visibility of the turnoff and facilitates safe operation in these important traffic separation areas.

An example of pavement markings to aid the motorist, showing painted median and left-turn channelization on a four-lane highway.

Warning and regulatory messages, by wording or symbol, will reach the driver even though he is too occupied with traffic to observe the comparable signs. Multiple turn restrictions in the traffic lanes may obviate the need for an overhead sign installation at many locations.

Signing

When the automobile came into popular use, people traveled farther and faster than ever before. Longer trips over new roads were commonplace, and there were more people using strange roads far from their homes. This increased travel, particularly travel for long distances, and created a strong demand for legible signs. As highways and automobiles improved, speeds increased and so did the need for signs that could be read from a moving car.

A basic concept is that signing must be designed for the stranger. Except for the larger metropolitan areas, the stranger represents more than one-third of the traffic stream. The actual numbers of strange motorists are greatest in these larger metropolitan areas, but on a percentage basis, these numbers are dwarfed by the high daily volumes of commuter and other local traffic.

Even the permanent residents frequently find themselves in need of directional signing. A change of residence, a trip off the beaten path, or a new freeway opened to travel, creates situations in which a motorist relies heavily on signs for the information he needs to find his way.

Three Types of Signs

There are three general types of traffic signs in use today:

1. *Warning* signs to caution drivers of the need for added alertness or reduction in speed.
2. *Regulatory* signs to inform motorists of regulations governing movement.
3. *Guide* signs for guidance and directional information.

Obviously, traffic signs of all types should follow uniform standards and be placed in accordance with uniform practice so they will have the same meaning and require the same action on the part of motorists wherever encountered. Statewide uniformity on county roads, city streets, and state highways minimizes drivers' confusion and contributes materially to the safe, orderly and expeditious movement of traffic. National uniformity is likewise important.

Signs are essential where special regulations apply, where unusual conditions are not self-evident, and to furnish directional information. They should be used wherever there is a real need, but not profusely. Too many signs detract from the effectiveness of those necessary for safety and guidance.

Well-known rules of the road or general provisions of the Vehicle Code are not generally required on traffic signs. Drivers are expected to know the rules for safe operation of their vehicles, and a multiplicity of needless signs with long messages would be distracting and serve no useful purpose.

On the other hand, guide signs, as the name implies, are to guide motorists along routes and to destinations of their choice, to inform motorists of intersecting routes, to direct to cities or towns, and, to a lesser extent, to furnish information and to identify locations not readily apparent.

Freeway Signing

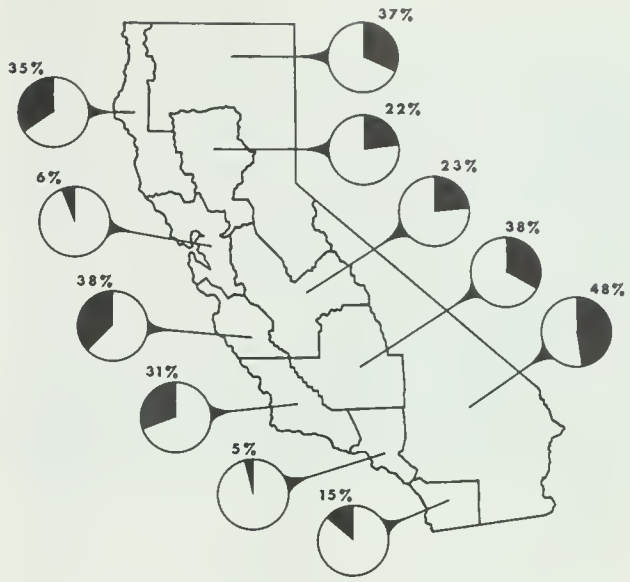
The modern highway with adequate visibility and easy curvature to accommodate all normal driving speeds reduces the need for warning and regulatory signs. However, the increased width and higher vehicle speeds, and the necessity for making decisions far in advance of turnoffs or intersections, greatly increase the importance of guide signs. This is particularly true on full freeways. Practically no warning signs are needed on freeways, except on ramps and connections at interchanges.

Like the early-day traveler, the motorist on present-day conventional highways takes advantage of familiar scenes, landmarks, buildings, and geographical features for information as to his whereabouts and the location of intersections and points where choice of direction is made; but the full freeways, with wider rights-of-way and no businesses or buildings of any kind fronting directly on the highway, present a sameness which may make identification of location difficult. This further brings out the need for guide signs of adequate legibility placed well in advance of turnoffs.

The extensive highway improvement program now under way in many cases removes traffic from congested business streets. This traffic is diverted to the newly-constructed routes, generally freeways, which bypass the main business district. This makes the subject of adequate directional signing of great interest to many communities and areas throughout the State. The statewide scope of the program requires that it be treated on a uniform statewide basis.

Improvements Noted

Increasing speeds of highway traffic and the rapid development of multilane facilities during the last several years have required extensive improvements in signing practices. Developments in signing over the last several years by this State, or in which this State was materially and directly concerned, are listed below:



Each region of the State imports travel in proportions shown in black from other areas in or out of California. With so many strangers using the roads, signing becomes tremendously important for proper guidance and understanding of regulations. The motorist relies heavily on signs for the information he needs to find his way safely and expeditiously.

The development of reverse copy (the use of white letters on a black or otherwise dark background for more effective nighttime legibility) stemmed from California studies. The black background reflectorized sign first appeared as essential regulatory signs, such as speed regulations or "Keep Right" at island noses, about 1929. The first reverse copy reflectorized guide signs were placed at the most important intersections in 1931. This type now has nationwide acceptance, particularly in the field of directional signing.

The use of upper and lowercase letters for guide signs, which is of proven advantage in recognition and legibility, was based on thorough California studies. The report of this investigation, which included the development of a lowercase alphabet, was dated 1950. The California style of lowercase lettering was subsequently utilized for directional signing by the major eastern toll roads, and has been adopted nationally for destinations on the Interstate System of Highways.

An experimental sign project still under way on the Ben Ali to Roseville Freeway involves the study of background colors and types of reflectorization and illumination. These studies indicated a major advantage in readability for illuminated signs but found relatively little difference in readability involving various types of reflectorized messages. Studies concerning effective life of the various materials are still being continued by the Division of Highways Materials and Research Department.

Increasing speeds and traffic volumes have required the development of larger signs with larger letters and fewer messages. The development of multilane highways made the shoulder-mounted sign relatively in-

effective for primary directional purposes. On four-lane highways where space is available in the median, dual installations could reach both lanes of traffic. However, with three or more lanes in one direction, it became essential to provide primary messages on overhead illuminated signs which are visible to all lanes of traffic at all hours of the day.

Overhead Signs Adopted

The first overhead signs were placed by the Division of Highways in 1948. The increased number of such installations each year led to the development, by the California Division of Highways, of standard plans for overhead sign structures. These standards include plans for butterfly-type signs, cantilever signs, sign bridges and combination sign bridge cantilevers. These standard plans have been requested by and furnished to a large number of states and some foreign countries.

In California, these standards have unified and greatly simplified the design of freeway projects which involve overhead signs. As steel fabricators have become acquainted with a uniform type of design, the cost of sign structures has been very materially reduced. Due partially to standard design, and due partially to an improved method of advertising, costs of sign structures have been reduced approximately 30 percent over the last year.

A research study on signing needs, requested by the Division of Highways, was made by the Automotive Safety Foundation of Washington, D.C., with the Institute of Transportation and Traffic Engineering of the University of California acting as consultants. It was completed in 1958. The report of this study, "Driver Needs in Freeway Signing," prepared by the Automotive Safety Foundation, sets forth six basic principles in directional signing—principles to which the Division of Highways subscribes.

The report cites signing deficiencies on many of California's freeways. However, it points out as a basic conclusion that "Many of the signing inadequacies observed in the study would be corrected if the signs in the field were made to conform to the current practices of the Division of Highways." In line with this report, it is the policy of the Division of Highways to correct signing deficiencies wherever a special problem exists, as well as provide high standard signing on new projects as they are completed.

To cite a few of the more important advances, particularly in freeway signing, it might be well to point out changes in the methods of providing advance notice and lane assignment.

Greater advance notice has become necessary partially because of higher speeds, but primarily because of the heavier volumes of traffic which require appreciably longer distances to effect safe lane changes. Primarily, the standard calls for a one-mile advance sign or, where interchanges are more closely spaced, a maximum advance distance that can be given from the preceding off-ramp. In metropolitan areas, a sign showing the next three off-ramps, and the distances thereto in miles and fractions, is placed following off-ramps in order to provide considerably more advance notice as well as repeated notice of each turnoff.

In the matter of lane assignment, California has used shoulder-mounted right-lane or left-lane signs since 1948 with the early development of four-lane highways. Originally placed about one-fourth mile in advance of a turnoff, such lane signs have been successively placed farther in advance as speeds and volumes increased.

Arrows Introduced

About three years ago, with the expanded use of overhead signs, more effective lane assignment was made available, particularly on metropolitan freeways and others with more than four lanes, by the use of the down arrow. This arrow, together with the name of the exit, was generally placed on the left panel of the overhead sign at the previous turnoff. Where distances between exits exceeded one and one-half miles, the down arrow often appeared on a cantilever sign approximately one mile in advance of the turnoff.

A more recent improvement was to include the exit distances in connection with the down arrow. This method, which is standard on the Interstate System, provides additional specific information, which reduces the possibility of confusion at the off-ramp. With the word "Exit" and a distance to this exit on the left panel, the motorist can no longer confuse the left panel message with a through destination.

Another change in signing policy, not yet apparent on the highways but involved in proposed signing for present and future projects, is the greater use of place names, particularly in metropolitan areas. Two names are the maximum that should be shown on an overhead sign and a mandatory maximum on the Interstate System. Although the street or road name which often serves a number of communities represents the best signing of turnoffs in metropolitan areas, the two-line sign generally permits including the name of one adjacent community. Such signing is determined through co-operation with local authorities.

Modern signing has resulted in many demands for the resigning of older freeways. In this respect, a systematic program is under way. Those areas with heavier traffic having the most critical deficiencies in signing receive first priority. One such resigning project now under way involves the approaches to the four-level structure in Los Angeles.

Spacing Important

The large directional signs on freeways require adequate spacing between signs. The total signing of a freeway project also includes numerous signs to direct and control traffic at the entrances from and exits to the local roads, through the interchanges, and on frontage roads. In addition, initial signing necessitated by the closing or altering of local roads in the freeway

project is provided. On this basis, a freeway project usually requires more total signs than the replaced highway.

The average number of signs on a typical cloverleaf interchange is 31 directional signs and 12 regulatory signs. This includes various signs approaching the interchange, including two overhead signs, and all signs for on- and off-ramps. A standard intersection of two main highways at grade, one of which being a sign route, would require 10 directional signs, two route markers, and four regulatory signs, or a total of 16 signs, as compared with some 43 signs for an interchange at the same location on an Interstate System.

A study of a recently completed freeway 13.6 miles in length shows that there are 462 signs placed on this route. These consist of 180 direction signs, 88 United States route markers, 143 regulatory signs which include 40 stop signs for approaching roads and ramps. Fifty-one warning signs were required for roads closed and for approaches to ramps. By comparison, the portion of the old road, which the new freeway replaced, had a total of 188 signs in all categories.

Illuminated signs over the traffic lanes require a sign bridge or other structure. This sign structure provides a maintenance walkway as part of the sign standard to facilitate the changing of illuminating tubes and the washing or repairing of the sign without interrupting the traffic flow or subjecting the maintenance man to the hazard of the high-speed traffic.

Pursuant to the statewide speed law which became effective January 1, 1960, the Division of Highways is installing 65-m.p.h. signs on the State Highway System. As of July 15, 1960, 275 of these signs had been delivered and 172 had been installed. Installation of these signs is continuing, particularly on freeways and other high-standard roads. In addition, 26 large signs setting forth maximum speeds for autos, vehicles with trailers, and trucks, have been installed facing entering traffic on all state highways which cross the state boundaries.

Costs Have Risen

The total cost of signing on state highways has increased from $773,000 in 1954 to $3,022,000 in 1959. Major factors of increased cost were enlargement of signs to provide more readable messages, greater use of reflectorization to provide 24-hour visibility, and increased use of overhead illuminated signs.

Costs increased noticeably in 1957 and then leveled off in the following two years. This was due to two factors. The present standards of freeway signing were largely established in 1956. Changes involved the use of large down arrow overhead signs at the off-ramp with advance sign bridges where required, and signs showing the next three exits to be used in urban areas. The other factor was the greatly expanded program of freeway construction with the first major federal interstate allotment in the 1956-57 fiscal year. Although

Signing and markings at urban freeway off-ramp near San Jose. Increasing speeds and traffic volumes have required the development of larger signs with larger letters and simpler messages for easier reading.

the rate of freeway construction is still growing, the percentage of rural to urban construction has been increasing. Rural freeways require a considerably lesser use of overhead signs.

The best estimate at the present time is that any future changes in signing standards would not be appreciable costwise, particularly as they involve new construction. Signing costs should therefore expand proportionally with the total highway program.

Agency Interrelationships

1. *Street and Place Naming.* It is standard practice to present directional signing plans on proposed freeway projects to local agencies for review. Plans are primarily sent to the city or county traffic engineer when the local agency has an established traffic department. Otherwise, plans are sent to the county road commissioner, county planning department or the local governing body. The Traffic Department reviews the plans for the larger cities, but in most instances, approval and recommendations come from the city council or the county board of supervisors. The recommendations of Chambers of Commerce and other public service groups are given consideration when they have the approval of the local governing body.

2. *Signing to Freeways.* In signing to freeways, the State provides signs from the major street from which on-ramp service is provided and provides advance lane-use signs on this street where appropriate. Signing to the freeway from more distant points is considered a function of the local agency. The City of Los Angeles is engaged in a major program of signing to freeways, and San Francisco has installed the "Skyway" signs to direct to the freeway from many city locations.

3. *Business Districts.* With the extension of the freeway system with no business fronting directly on the highway, it becomes more and more important to

designate to motorists where services normally required by the traveler may be found. On directional signs, this is accomplished by designations such as central district, business district, downtown or civic center, and sometimes the name of a district or area within a city.

It is frequently found desirable to designate a "business" route on a section of former state highway which is relinquished when the community which it serves is bypassed by a new freeway. Proposed United States business routes must be submitted for approval to the American Association of State Highway Officials. These business routes are principally within the corporate limits of a city and provide the opportunity to travel through the business section.

In the foregoing types of situations where a business route would be of benefit to the motorist, and local authorities are in accord and agree to maintain the necessary signs, it is the division's practice to recommend approval of this type of signing to the American Association of State Highway Officials. When a business route is approved, all directional signs on the state highway directing to the the business route are installed and maintained by the Division of Highways.

4. *Roadside Business.* The problem of providing adequate directional signs to roadside businesses on frontage roads, or on old roads bypassed by construction of freeways, developed about 1949. Signs with various wordings were considered, such as roadside services, roadside business, roadside business area, roadside motels, etc.

The sign reading "Roadside Business" was adopted with the approval of the Motor Hotel Association of California. This sign indicates all types of services and accommodations and is consistent with the present signing practice of placing business signs with route markers to indicate business routes not on the main highway and providing direction to business districts.

Speed Zoning

Speed zoning is described as the establishment of reasonable limits, based on traffic and engineering studies, at locations where general speed limits do not fit the road and traffic conditions.

In view of the importance of assuring safe and rapid transportation, speed regulations are based upon the prevention of those accidents in which excessive speed is an important contributing factor, without needlessly restricting drivers at times and places where higher speeds could be safely permitted.

Under the procedures used by the department, motorists themselves establish the speed limits. The speeds at which motorists drive are recorded by means of special speed-measuring devices. The speed at or below which 85 percent drive is then selected as the appropriate speed limit.

Lower limits are used only when special conditions exist which might not be apparent to a normally prudent driver. Speed limits established in this way have proven eminently acceptable to motorists while unrealistically low limits tend to have no material effect on their driving speeds. The practice of establishing speed zones on the basis of prevailing speed provides realistic guidance for motorists and enforceable limits which serve as an honest basis for safety.

The speed limit should correspond closely to the speed at which the normally prudent driver would operate under existing conditions. Because conditions at any location change with fluctuations in traffic and variations in the weather and visibility, it is customary to set speed limits for average physical and traffic conditions and for favorable weather and visibility.

Legal Authority Given

Speed zoning in California began when the 1941 Legislature increased the prima facie speed limit from 45 miles per hour to 55, and at the same time provided for prima facie speed zones of 35 and 45 m.p.h. on the basis of an engineering and traffic investigation. This act authorized upward zoning of 25 m.p.h. zones but only permitted downward zoning for 1,000 feet at either end of a legal business or residence district. Actually, little action was taken along this line until after the elimination of the general 35 m.p.h. wartime speed limit in August 1945. The authority covering the reduction of the 55 m.p.h. limit was greatly expanded by the 1947 Legislature. In 1955, authority for zoning upward and downward in five-mile increments was established.

The 1957 Legislature established the speed zoning for three-axle trucks and combinations on a descending grade and provided the authority for variable speed limits on freeways. Under the authority to speed zone trucks on downgrades, 15 such locations, involving approximately 53 miles, have been established and posted.

The major speed law, as enacted by the 1959 Legislature, established the 65 m.p.h. maximum statewide limit. The act also eliminated the mandatory 25 m.p.h. zones for state highways, provided for downward zoning in five-mile increments from 60 to 25 m.p.h., and provided authority to establish minimum speed limits.

This act resulted in greatly-expanded speed zone activity by the Division of Highways, as many lengths of highway, unposted under a 55 m.p.h. law, were not considered appropriate for 65 m.p.h. Speed zone investigations were begun on a statewide basis as soon as the passage of the legislation was assured, in order to have all critical areas posted by January 1, 1960, the time when the new law became effective. Speed zoning has continued at this accelerated rate over the first half of 1960 and will continue until all appropriate locations on state highways are properly zoned.

Studies have shown that speed zoning has very little permanent effect on average vehicular speeds. There are indications, however, that it does have a tendency to group more of the drivers within the 10 m.p.h. pace speed range through the fact that some of the slower drivers drive faster and some of the faster drivers drive slower after a restricted speed zone is established. The 10 m.p.h. pace speed range is 10 m.p.h. increment of speed which includes the greatest number of vehicles.

An important benefit of properly established speed zoning is to provide a means for officers to apply enforcement to those who do not conform to speeds considered reasonable and safe, as set by the majority of drivers.

Information Sought

The basic information and the steps required in the development of the engineering and traffic survey are as follows:

1. A strip map of the highway showing highway width, alignment, grade, roadside development and the traffic volumes.

2. Spot speed checks at intervals of about 1,000 feet, taken in off-peak daylight hours. The sample generally includes 200 vehicles in each direction.

3. Accident data which usually includes accidents for the prior three years, plotted at the location of occurrence on the strip map. Also, the accident rate, on the basis of vehicle miles, is computed for the total length, or by segments of length if more appropriate.

4. The next step is analysis of the data which includes the determination of average speed, 85 percentile speed and the pace speed for each location where spot speed checks were taken. The 85 percentile speed is defined as the speed at or below which 85 percent of the motorists are traveling. The 85 percentile speed and lower limit of the pace speed are used to make a speed profile for each direction of traffic.

5. Determination of speed limit and length of zone. Many factors are taken into account in determining the appropriate speed. The prevailing speeds and the accident rate are of the most importance and are given primary consideration.

Experience has shown that speed zones, to be practical, must be at least 1,000 feet long for 25 m.p.h. zones, up to 2,500 feet for 55 m.p.h. zones. This is the minimum length possible for adequate enforcement.

Signals and Lighting

1. *Signals.* Traffic signals are installed to effect the orderly movement of vehicles and to reduce the number of certain types of accidents. They do not always increase safety or reduce delay, but they do allow other vehicles and pedestrians to cross a continuous traffic stream. The number of right-angle collisions may decrease after the installation of signals, but the number of rear-end collisions will increase in many instances.

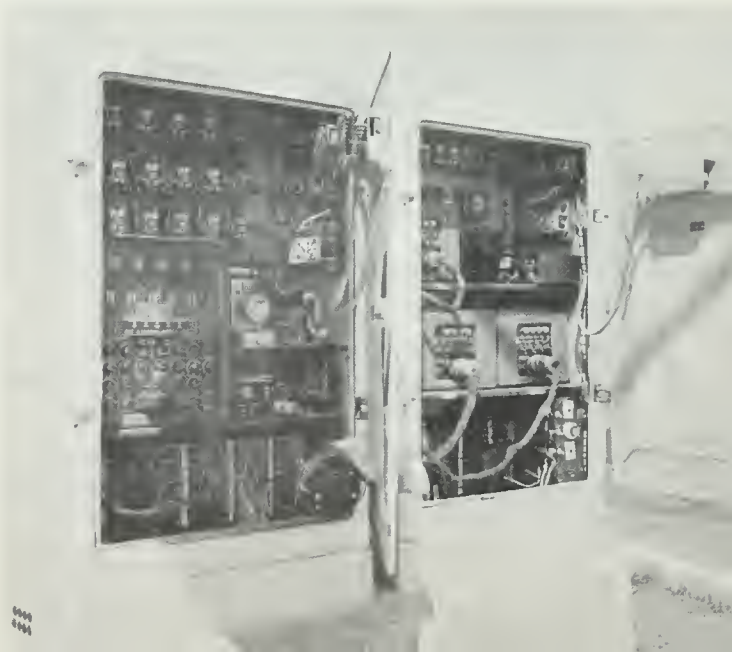
2. *Lighting.* The purpose of highway lighting is to promote the safe and orderly movement of traffic by artificially illuminating certain permanent features or conditions which are unusual, which require additional care and alertness to negotiate and which, if artificially illuminated, may be more readily comprehended and so compensated for by the motorist.

The first electrical traffic signals installed about 25 years ago were of the fixed-time type. That is, the same green time was indicated to the traffic regardless of changing traffic patterns. Latest types of fixed-time controllers provide any one of three programs which are changed at different times of the day to meet varying traffic demands. This is satisfactory where traffic follows a consistent pattern.

Because traffic does not always vary in a predictable way, and to avoid delays, most of the new signals on the State Highway System are of the traffic-actuated type. The early types of these devices first installed in 1942 provided a varying length of green time on each street up to a preset maximum. The latest type of this system uses an electronic computer type of controller which not only varies the length of green time on each street, but calculates the best time to change the green signal from one street to the other by picking a gap in traffic at a time to produce the least total delay to all vehicles.

There are approximately 3,000 traffic control signals in place on the State Highway System. Some of these installations were made by other agencies before the highway was taken into the state system.

The motorist may never have seen the "brain" of the familiar traffic signal. Here is the complicated wiring and mechanism of a signal controller, including railroad pre-emptian, for a traffic-actuated signal system.



Safety lighting on U.S. 101 near Loleta.

Due to the accelerated freeway program, including the Interstate System, the number of lights and illuminated signs installed has been increasing. The total cost of new electrical installations has risen from $1.5 million in 1950 to almost $8 million in 1959. During this same time, the annual maintenance cost, including energy, for electrical installations has risen from $200,000 to $2,200,000.

Most signals are of the two-way or two-phase type. This type of signal provides a green light for the main street and then cross street, and then repeats. Where there is a very heavy left-turn movement, it is frequently necessary to provide a separate signal phase to protect this movement.

Results Achieved

1. *Traffic Signals.* Advance types of electronic traffic control equipment, coupled with proper channelization, can provide increased traffic capacity at a fraction of the cost required for widening the highway pavement.

At existing signalized intersections where there has been an accident problem, various types of improvements have been devised to reduce the number of accidents and delay to vehicles.

2. *Highway Lighting.* The installation of lighting at intersections showing a preponderance of night accidents has been effective in improving safety.

3. *Sign Lighting.* New methods of illuminating signs, such as black light and electroluminescent material, have been installed experimentally.

The search for electrical and electronic devices which can be adapted to traffic control to provide more efficient flow of traffic and to reduce accidents is continuous. This activity requires the services of specialists who have knowledge of both traffic engineering and electrical engineering. Continued study in this field is essential.

There is continuous research within the department and exchange of ideas through contacts with other agencies and states and through membership on national committees.

Traffic Census

The ability of a segment of highway to accommodate the traffic load without undue congestion and delay is a major consideration in the planning, improvement and operation of highways. The Division of Highways depends on traffic census data to furnish the basic information required to measure the traffic load on state highways.

The division conducts an annual census of traffic. From this data, the average daily traffic on each of the various segments is computed and combined with accident data to produce a log of the highway system with respect to traffic volumes and safety. This data is used in identifying sections or locations with safety or capacity problems, in programming improvements, in the review of proposed improvements, and in studies of various highway design features. It is also used to determine long-term traffic trends for estimates of future traffic, both at specific locations and for estimates of statewide travel. The latter material is in-

cluded in reports to the Bureau of Public Roads and many special reports to the California Legislature.

Measure of Accident Exposure

Traffic volume data from the census is used to measure the accident exposure and hence is generally included in all accident studies and information.

The present traffic census of the Rural State Highway System is based on 16-hour manual counts taken annually on a mid-Sunday and Monday in July. This traffic census was initiated in 1924 and now is in its 37th year of operation. Numerous revisions were made as the highway system grew and changed location, but, basically, the program has remained unchanged. Prior to 1936, the statewide count was made twice a year, in January and July, at approximately 2,500 locations, and was supported by seasonal information obtained at one location counted for 16 hours one Monday each month. By 1958, the system consisted of annual counts at some 4,150 locations with seasonal information obtained at some 300 locations.

A separate count system, based on automatic machine counts, was initiated in 1957 to count traffic on the state highways within the limits of incorporated cities. Traffic was counted for 24 hours on a weekday in July at some 3,060 locations. These counts were expanded by seasonal information obtained from 210 locations counted for 24 hours one weekday each quarter.

The basic traffic volume data used in the formal and informal reports aimed at the improvement of design standards is generally derived from the annual traffic census. Traffic volume data derived from the census is also a part of the basic data required for the measurement of highway deficiencies. This information, together with accident data, is the primary consideration in the budgeting and planning of improvements.

Traffic regulations cover restrictions on vehicle movement necessary for proper control at specific locations. Such control can materially improve safety and traffic flow even on obsolete highways. Here are lane control signals for a three-lane underpass on a four-lane section of U.S. 50 east of Sacramento.

Traffic Regulations

Traffic regulations are issued or approved by the department to cover the various restrictions that may be necessary for proper control of traffic at a specific location. Their establishment requires an official document which may be an order of the Director of Public Works or a local ordinance. The latter generally requires the approval of the department if a state highway is involved.

Although regulations are by nature restrictive, the department attempts to use them in such a way that they enhance the safety and convenience of the majority of the motorists. Thus, prohibition of parking near an intersection may inconvenience some motorists while benefiting many hundreds of other motorists.

The primary traffic regulation of the department is speed zoning, which is reported in another section of this report. The most important of the other duties given the department relate to the designation of certain lanes for heavy vehicles, regulation of parking, installation of facilities in intersections to control direction of traffic, and the regulation of traffic on toll bridges.

Important local regulations on state highways requiring departmental approval relate to regulation of parking, parking meter zones, truck routes and one-way streets.

Of the many traffic restrictions involved in this function, most have played a role in facilitating traffic movements or increasing traffic safety. Parking prohibitions, and establishment of one-way streets or truck routes are examples of urban regulations to accomplish both objectives.

The prohibition of parking maneuvers and parked vehicles and the exclusion of pedestrians, bicycles and other nonmotorized traffic from full freeways have been important factors in achieving the excellent safety record on such facilities.

Road Information

Road information has been furnished to the public for over 25 years by the California Division of Highways. Since the division is responsible for maintaining the state highways, it has gathered and disseminated such information to the press, radio, public, and other state agencies over the years.

The growth of the function is directly related to the expansion of the division's communications facilities. In the 1930s road information was released to the press and radio each Friday during the winter months. The information was secured by telephone and then sent to newspapers and wire services.

Immediately after World War II, the Division of Highways installed a statewide mobile FM radio system. As the system grew, road information services enlarged. Data was received daily by radio, rather than tele-

phone, and redistributed to the radio, wire services, newspapers and others.

As the public demand for accurate information increased, techniques for collection and dissemination were improved until the present method of operation was evolved. At the present time the Division of Highways furnishes road information daily during the winter months to approximately 250 different agencies, which pay for the service.

The service performs many valuable functions. To the motoring public it provides accurate information, particularly regarding hazardous and dangerous conditions, thus contributing to motoring safety. It assists trucking firms in the rerouting of vehicles when road closures, delays or severe storms may be encountered. It assists the Division of Highways in the co-ordination of men and equipment and in the reduction of traffic in hazardous or dangerous areas.

Permits

Administration of the permit provisions of Chapter 266, Statutes of 1923, forbidding the operation of any vehicle having cleats or protuberances on the wheels, or any vehicle over a specified weight or width without a special permit, was delegated to the Maintenance Department of the Division of Highways in 1923. Authority was similarly delegated to administer the control of encroachments within state highway right-of-way under the provisions of Chapter 99 and Chapter 400, Statutes of 1915. These functions will be treated separately hereafter.

However, the permit sections within the respective state highway districts are organized to handle both types of permits. Originally, with the small volume of permits processed, the work was handled by district maintenance personnel in conjunction with their other duties. As the volume increased in the several districts, the organization was necessarily expanded gradually, and permit sections were set up under the district maintenance engineers.

Transportation Permits

The control of size and weight of vehicles and loads operated or transported over public highways is essential for the preservation of the road surface and structures, as well as the safety of highway traffic. In order to allow for emergency need or the occasional movement of a vehicle or a load which cannot be readily made to conform with the legal size and weight limits and must be moved over a highway to its final location, provision is made for the issuance of special permits designated as Transportation Permits. All such movements are subject to the following administrative requirements:

Except in emergencies, permits are not granted for extra-legal loads (1) of a type which can be made to conform to legal restrictions; (2) for long hauls (generally in excess of 50 miles) of loads exceeding 11 feet in width where railroad or water transportation is available; and (3) over routes where the oversize would present an undue hazard to other traffic. Basically, this provides for the necessary movement of nonreducible loads and precludes the issuance of permits for loads which can be hauled legally simply by reducing the payload to the legal size and weight limits.

Loads exceeding 11 feet in width are limited to short hauls where other means of transportation are available or from railhead to jobsite regardless of distance, subject to the established weight controls based on the overload capacity of highway structures involved. All highway structures are rated for maximum overloads indicated on maps by color code, which ratings may not be exceeded without special stress analysis by bridge engineers and determination of temporary strengthening required to safely sustain an excessive overload.

Purple bridge rating allows under permit a 50 percent overload on groups of axles within 18 feet and a maximum 28,000-pound single-axle load. Green rating allows an overload of 30 percent on axle groups with 24,000-pound maximum axle. Orange denotes no overload allowed, and red indicates bridges posted for less than legal loads, which posted limits may not be exceeded under any circumstances.

During the past 20 years the volume of permits has increased from a total of 4,600 in 1939 to slightly over 104,000 in 1959. The rate of increase has been fairly constant over the years, with the two metropolitan districts at Los Angeles and San Francisco handling about 33 percent of the statewide total.

Encroachment Permits

The purpose of encroachment permits is to allow others to use the state highway right-of-way where the use, jointly with the public, is appropriate, can be accomplished in a manner which will be safe and as convenient as is practical for the traveling public, and will not endanger the highway investment.

Under controls established by the State Highway Engineer, encroachment permits prepared on standard forms are issued by the respective district offices. Originally, all permits prepared in the division offices were referred to the Maintenance Engineer at Sacramento headquarters for review and approval.

Recommendations for denial were likewise referred to headquarters, where letters of denial were prepared and forwarded to the applicant. As the volume of permits increased and uniform controls were established, the work was gradually decentralized by giving the district engineers more authority to issue routine encroachment permits without headquarters control.

Permits for other classes of major encroachments such as highway lighting, traffic signals, railroad grade crossings, public road connections to freeways, removal of live trees not directly connected with driveway construction, utility crossings of interstate highways, and any recommended variances from standard

policies are still referred to headquarters office for review and approval.

The most common types of permits involve improvements to existing driveways or construction of new driveway connections where direct access to the state highway is permitted, and the installation of public utility facilities on or across state highways.

The design and construction of all driveways are controlled by the Regulations for Standard Driveways to Serve Property Fronting on State Highways Outside the Limits of Incorporated Cities. These regulations also apply to state highways within cities being maintained by state forces, where more restrictive city ordinances are not in effect.

Utilities Get Permits

Public utility encroachments comprise the other extensive utilization of state highway right-of-way under encroachment permits. It has been a long-established practice to permit the installation of public utility facilities on conventional highways where space is available and installation is consistent with public safety.

With respect to freeways, statutory provisions entitle utilities to a permit for such reasonable crossings of freeways as are required for the proper discharge of the utility's service to the public. Authorization for longitudinal utility encroachments is discretionary, with the department taking into consideration the interests of the traveling public upon the freeway and the needs of consumers for public utility services.

All such requested encroachments are subject to the review and approval by the Longitudinal Encroachment Committee at the headquarters of the Division of Highways, comprised of representatives of the Design, Right of Way, and Maintenance Departments. It is the practice to avoid encroachment on freeways which, during construction or maintenance, would disturb traffic or damage planted or landscaped areas.

Encroachments on freeways included in the Interstate System are also subject to the Policy on the Accommodation of Utilities on the National System of Interstate and Defense Highways adopted by the American Association of State Highways Officials and accepted by the Bureau of Public Roads. Basically, this policy precludes longitudinal utility encroachments within the control of access lines where the interstate highway is on new location.

Subject to BPR Approval

No new or additional utility installations may be made along the interstate highway except along a frontage road outside the control of access lines. New utility installations and adjustments or relocation of existing utilities may be permitted to cross interstate highways, preferably under the highway. All utility encroachments on interstate highways are subject to approval by the Bureau of Public Roads.

The number of encroachment permits issued has remained fairly constant for the past several years, but has practically doubled in the last 20 years. In 1959 some 14,300 permits in all categories were issued by the district offices, with the Los Angeles and San Francisco districts processing about 51 percent of the state total. A peak of some 16,000 encroachment permits was reached in 1957. This number has dropped to some extent and a diminishing trend is indicated. This may be attributed to the access control features of the freeway program with relinquishment to local jurisdictions of superseded conventional highways for which encroachment permits were previously issued.

Motor Vehicle Administration

From Testimony by Tom Bright, Deputy Director, for the Department of Motor Vehicles

The growth and development of the California Department of Motor Vehicles to a position of recognition as the largest agency of its kind in the world has been a corollary of the unprecedented use of the motor vehicle in California.

Sixty years ago there were relatively few automobiles in California and only cities and counties were authorized to license them at a fee of not more than $1 per year. As their numbers increased, it became evident that some type of state controls were necessary, and in 1905 the Secretary of State was designated to license and register motor vehicles at a fee of $2. During this first year of state operation, 6,428 vehicles were registered and more than $20,000 in fees were collected. From this humble beginning has developed an annual current registration of more than 8,000,000 vehicles and collection of almost $240,000,000 in all fees in 1959.

For a period of nearly two decades, the functions of registering vehicles and licensing drivers shifted from one state agency to another. Briefly, from 1914 to 1919 an independent State Department of Motor Vehicles emerged, but it was ineffective and did not survive. Not until 1931 did the present Department of Motor Vehicles come into existence, establishing the fundamental pattern upon which all subsequent organizational changes were effected. This early organization called for a director, as an appointee of the Governor, to head the department consisting of a Division of Registration and a Division of Enforcement.

The administration of the department is still vested in a director, but the organizational structure has grown with the increase in duties assigned to the agency. The present four divisions reflecting these duties are Administration, Registration, Drivers Licenses, and Field Office Operations, each administered by a division chief. Within the four divisions are many sections and units each having definite subfunctions to perform.

To carry out these duties, the department employs approximately 4,600 permanent employees, maintains 137 field offices, and staffs 26 traveling crews to provide service to communities not served by field offices. During each registration renewal period additional help is employed to assist in handling the heavy volume of registrations.

Almost ever since the first Department of Motor Vehicles was created by statute, there has been a growing misconception in the public mind that it is primarily a tax-collecting agency.

A Service Agency

Actually, the department is fundamentally a service agency and its tax-collecting activities are incidental to its other operations. Its slogan, "Justice, Service, Protection," is illustrative of its objectives in this respect. It provides the means whereby vehicle ownership may be transferred. It furnishes the registration card and license plates to identify the vehicle and to indicate the payment of the use tax for streets and highways. It examines and licenses drivers to operate motor vehicles and thereby gives assurance to the motoring

public that certain minimum standards have been met. It seeks to protect the public from financially irresponsible owners and drivers of motor vehicles. And, finally, it provides a broad service to the public through the licensing of those who serve them in the automotive field.

It thus is apparent that the functions of the California Department of Motor Vehicles fall into four major categories: the motor vehicle registration and title function, the drivers license issuance and driver improvement function, the financial responsibility function and the occupational licensing and business regulation function. These four functions will be dealt with separately in the following resumes of activities.

Vehicle Registration and Title

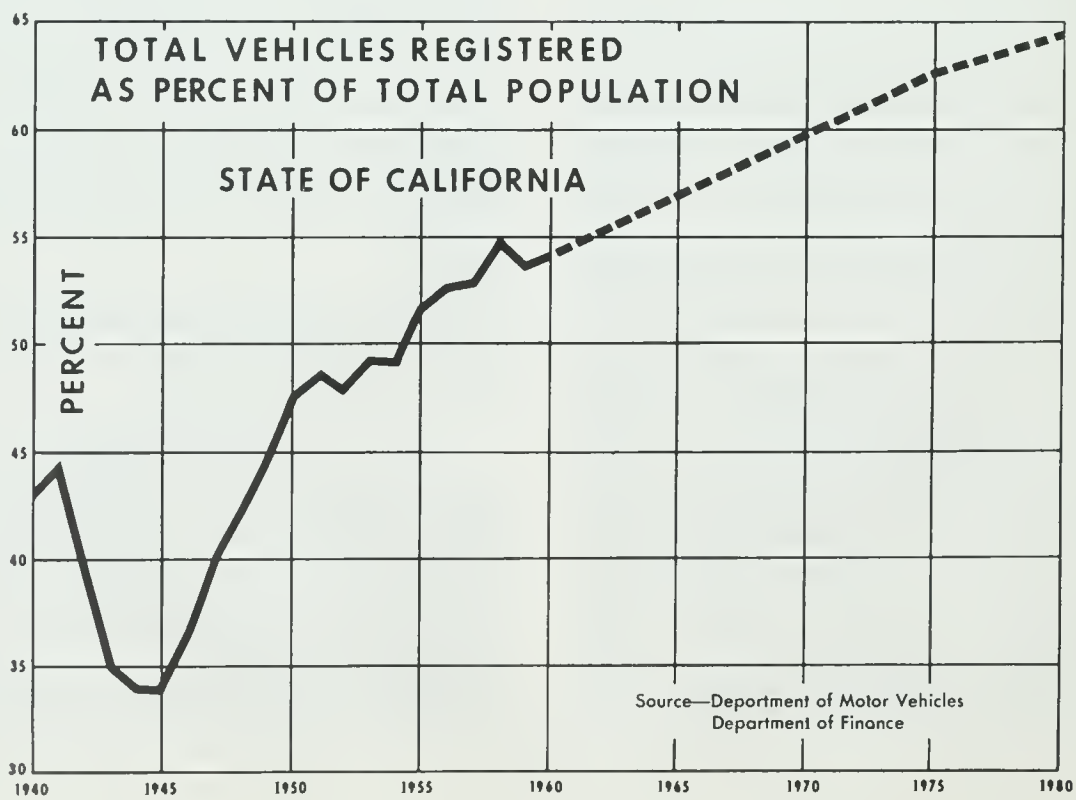
Few chapters in California's economic history have been more amazing than the growth and use of the automobile. Starting at zero near the turn of the century, registrations of motor vehicles in this State mounted to more than a million by 1923 and to more than two million by 1939. Registrations passed the three million mark in 1941, then declined during the war years, only to explode again afterward. They exceeded four million in 1948, five million in 1950, six million in 1954, seven million in 1956, and eight million in 1958. California today leads all other states individually in vehicle registrations and from all indications it may be expected to hold this supremacy for many years to come.

It was inevitable that the rapid growth of the use of the motor vehicle should bring about an early demand for its regulation. Although early legislatures recognized that the use of motor vehicles would require regulation, they did not anticipate this use would ever reach the proportions it has today.

Looking beyond the present, it is anyone's guess as to what the future holds. One thing appears certain: that the desire for speed and the impatience to get from one place to another will probably be at least as dominant in the next two decades as it is now. Machinery, horsepower and fuels will probably become increasingly powerful or complicated, and the piston engine may be displaced by some other source of power. We undoubtedly will see more trucks on our highways, probably operating in trains at much higher speeds than at present. The growing interest of shippers in the use of containers, units that can be transferred with their loads from truck trailers to railway cars, boats and airplanes, holds promise of increasing problems for those concerned with motor vehicle administration.

New Developments Seen

There is much speculation about automatic guidance systems, radar controls and other technological refinements which seem to hold some promise of at least partially solving our accident problems. Introduction of such devices, however, would necessarily require many years to complete. They would not be effective unless all vehicles were so equipped and because of the



expense involved, it would not be feasible to attempt to equip other than new vehicles.

Much has been said about rapid transit systems and their probable effect upon the use of motor vehicles. It seems unlikely, however, that Californians will relinquish their private means of transportation until the congestion becomes so great that reasonably prompt movement from one place to another is impossible.

Motor vehicle registration is the oldest of all state functions bearing on motor vehicle ownership and use. It has received perhaps less attention and recognition than any other as a subject for research and study. In general, there has been more concern over the years about the fee to be charged and over the dimensions, shape, legend and placement of the license plate, than there has been over the philosophy and underlying principle of registration as a greater and more useful instrument of public service.

Registration of motor vehicles serves two primary purposes: (1) it affords a system of ready identification and control, and (2) provides a means of collecting the privilege tax for use of streets and highways.

License Required

Every vehicle operated in California must carry a license and certificate of registration unless a specific exemption is granted. It is the responsibility of the department to examine and determine the genuineness and regularity of every application for registration and to reject any applications which do not meet the criteria set by law.

Coincidental with registration of a vehicle and collection of a registration fee, the department has responsibility for collection of the vehicle license fee, paid for the privilege of operating a vehicle over the public highways of the State. It is collected in lieu of the personal property taxes, which before 1935 were levied against motor vehicles by the individual cities and counties. The fee is set at 2 percent of the market value of the vehicle as determined by the department. Except for the administrative expenses allowed the department for collecting the fee, the revenue derived therefrom is apportioned to the cities and counties.

The department maintains in its files a history of every motor vehicle registered in California for the current year and three prior years. These files are essential for preservation of the integrity of California's certificate of ownership. They are maintained in three different categories: (1) by registered owner's name in alphabetical sequence; (2) by engine number; and (3) by license number. This complete identification system under which all transfers of ownership are recorded, is of great service to the public and to law enforcement agencies. As an added service to the public and to law enforcement groups, a license number file also is maintained in the department's Los Angeles office.

The tax collecting phase of the department's registration activities is carried on principally during the registration renewal period. Taxes collected during the remainder of the year come principally from new car registrations, registration of nonresident vehicles, registration of previously nonoperated vehicles and penalties for nonregistration, which aggregate a relatively small amount in comparison with renewal period collections.

Workload Doubles

Studies show that the registration workload of the department more than doubled during the period from 1946 through 1958. In 1946, the total number of registered vehicles in California was 3,097,882. This grew to 8,086,571 in 1959. Many factors contributed to this tremendous growth and, according to all present indications, it is likely this growth will continue. Present official estimates for the total number of fee paid registrations for future years are as follows:

1965	10,500,000
1970	13,000,000
1975	15,800,000
1980	18,300,000

It has been found that many of California's past official estimates of future growth have been on the conservative side. In this connection, it is interesting to note that in the report of the Joint Fact-finding Committee on Highways, Streets and Bridges, published in 1946, the following long-term projections of total motor vehicle registrations were made:

	1946 Estimate	*Actual or 1960 Estimate*
1950	4,480,000	5,043,000
1960	5,250,000	8,000,000 plus
1970	6,320,000	13,000,000
1980	7,030,000	18,300,000

Ever since 1948, the department has made use of an increasing number of rented or purchased electronic accounting machines to handle this great mass of registration work. The mechanized system helps to account for the various fees received, to allocate funds and to produce the registration certificates and ownership certificates required by law.

Electronics Studied

The pressure of this constantly increasing workload prompted an intensive study during the past two years leading toward application of electronic data processing equipment in registration work. Bids have been submitted by several leading manufacturers of such equipment on these new EDP systems. The department has great hopes that electronic data processing holds the solution to many of its problems in processing registration items.

There have also been other studies seeking a simplification of the registration procedure. As a result of an Assembly resolution passed in 1951, a study of staggered renewal of motor vehicle registration was conducted jointly by the Department of Motor Vehicles and the Department of Finance. This study dealt with the staggered registration systems in Wisconsin, Missouri and Oregon, and analyzed thoroughly all

aspects of the proposed system as it related to the California situation. The final recommendation of the study committee was that California should not adopt a system of monthly staggered registration renewal on grounds that it would not provide greater service to the public and would result in increased operating costs in California.

Even more recently, the department suggested to the Senate Committee on Governmental Administration that a study be made of the possibility of a lifetime registration of motor vehicles. The principal objective of such a plan would be avoidance of the annual renewal rush which is time-consuming and expensive. The committee has indicated interest in the suggestion.

Because of the enormity of the department's registration business any deviation from the norm creates administrative procedural problems and burdens. Into this category fall the exemptions from registration requirements granted to such vehicles as implements of husbandry, cotton trailers, special highway construction equipment and cemetery equipment. Each exemption must be defined to enable departmental employees to determine accurately the eligibility for exemption of the particular vehicle.

Special Plates Issued

There also is the problem of issuance of special purpose license plates such as amateur radio station licensees, press photographers, horseless carriages, paraplegic veterans and others. The procedures required in issuance of these plates are contrary to the procedures used for the great mass of vehicle registrations and thus entail greater costs.

In addition to collecting registration fees for all vehicles, weight fees, transfer fees, application fees and other incidental fees, the department also collects the vehicle license fee or in lieu tax, as has been noted previously in this report. The department is allowed the administrative costs of collecting such fees which, of course, are allocated to cities and counties in lieu of the personal property tax on vehicles.

At the present time the California delivered price of the vehicle to the consumer is used as the basis for computing the vehicle license fee. More than 200 different possible classifications of fees with a depreciation

Processing of motor vehicle registrations and records keeping tox the capocity of men ond mochines.

TOP—Californio was one of the pioneers in automoted registration fee accounting and certificate issuance. Here is o small part of the installation in use for the lost 13 yeors.

CENTER—Forerunner of a complete electronic dota processing system far vehicle registrotion. It is used for rating fees for vehicles over a period of five yeors.

BOTTOM—Complete histories of more than 8,000,000 vehicles licensed in California are the heort of the registration system. Here are only a few of the four years of files maintoined.

schedule of nine years of different fees for each classification are currently employed. This makes a total of 1,800 different individual fee amounts charged. This tends to compound itself as registrations increase.

There is a further problem in administration of the Vehicle License Fee Law arising from changes and innovations in the trucking industry. More and more fleet owners are using a large number of different specialized bodies with a relatively small number of tractors. Under present requirements body changes must be recorded and fees adjusted. This results in a large volume of paper work and considerable effort to avoid loss of tax collections.

The popularity of department records as a source of information continues to grow. Although the largest volume is directed toward drivers license files, registration files also receive a great deal of attention. During the calendar year 1959 there were 276,032 requests handled for registration information. Of these, more than 57 percent were of a type requiring no fee; that is, they were from government agencies of some kind. In addition, the department was requested to furnish 62,293 photostatic copies of registration records, more than 78 percent of which were of the no-fee variety. At present there are approximately 12 private companies which hold permits allowing their employees to have access to registration files under provisions of Vehicle Code Section 1814.

Information Made Available

The department also makes available an information service whereby persons, corporations or companies which regularly need information from records of the department may arrange to mail in such requests periodically for prompt reply on a monthly billing basis. As of this year, there are more than 200 bonded companies holding separate contracts or agreements with the department for such service. The majority of these companies seek only drivers license records but the agreements provide for the furnishing of registration information as well.

The department has contracts and agreements with private companies to furnish exact copies in punched cards of all registration records made by the department. The companies purchase this information to furnish motor vehicle statistics to various users.

Most of this information business is on a self-reimbursing basis; that is the 25 cent service fee covers the cost of the transaction. During the 1959-60 fiscal year, reimbursements for information services in registration amounted to nearly $152,000. Drivers license information reimbursements totaled more than $925,000 and field offices collected about $700.

It can thus be seen that information from departmental files is big business and represents a sizable part of the department's operation.

No discussion of motor vehicle registration could be considered complete without comments upon its related function dealing with issuance of Certificates of Ownership.

Certificate of Ownership

The first laws regarding transfer of ownership are found in Section 8 of the California Motor Vehicle Act of 1915. They provided for the filing of a notice of transfer with the department within 10 days and a transfer fee of $1. The department, when satisfied with the genuineness and regularity of the transfer, was to register the vehicle in the name of the transferee, a provision which generally holds true today.

Legislative history discloses that the first reference to a Certificate of Ownership is found in Section 41 of the California Vehicle Act of 1923. It provided that this certificate be issued to the legal owner of the vehicle or to a person who was both registered owner and legal owner. In addition, it provided that the reverse side of the Certificate of Ownership should contain a form for notice of transfer of title or interest of the owner or legal owner and for application for registration by the transferee. When the California Vehicle Code was enacted in 1935, this provision was carried forward as Section 151. Still later, when the California Vehicle Code was recodified in 1959, it became Section 4450 and still was substantially unchanged from 1923.

Chattel mortgages made their first appearance in motor vehicle law in 1923. The law then provided that no chattel mortgage on a motor vehicle was to be valid or effective for any purpose except as between the parties until the mortgagee named therein was registered as the legal owner in the manner provided in the act. Many changes were made in the law over the years, the most important being the amendment of 1951 which deleted a requirement for filing a copy of the chattel mortgage.

Sales Recorded by Law

The public generally fails to attach sufficient importance to the Certificate of Ownership, as evidenced by the number which are lost or misplaced and for which duplicates must be issued. The motor vehicle is the only chattel which state law requires to be recorded when purchased or sold. Consequently, the Certificate of Ownership has become an instrument of vast import to the economy of California.

It has been stated that more people are engaged in some form of business endeavor connected with the automobile than anything else in our nation. In California alone 180,000 persons are engaged in activities related to the automotive industry. Their very livelihood depends upon the motor vehicle and its needs and to a degree upon the integrity of the California Certificate of Ownership which in 1959 served as the

Ortho-rater test for visual acuity.

Taking photo for driver's license.

transaction medium in nearly 3,750,000 cases involving ownership.

As further evidence of the importance of the automobile (and incidentally the California Certificate of Ownership) to the State's economy, it should be recognized that of the $6,700,000,000 in total receipts from retail establishments and services last year, a little less than 25 percent was derived from automotive trades and services.

Further emphasis is placed upon the importance of the ownership certificate and its integrity when consideration is given to the fact that approximately 60 percent of all vehicles are purchased on credit. The security for this credit is the California ownership certificate which is recognized by the State's business community as being unquestionable evidence of title.

Driver Licensing and Improvement

The first comprehensive law requiring the licensing of motor vehicle operators was adopted by the Legislature in 1913. When the increased usage of the motor vehicle began to result in an increase in traffic accidents, it became evident that some form of driver control was necessary. This, then, was the initiation of still another service which is continued today by the department. The department protects the public against unqualified drivers by refusing to license those who fail to meet minimum standards, and by carefully watching the records of all drivers to correct faulty driving habits which in time might make them a menace on the highways.

It was not until 1927, however, that the law was amended to provide for an examination of an applicant for a driver's license. Up until that time examination had been optional. Two years later the law was amended to provide for the renewal of licenses every two years and authority was given to the Department of Motor Vehicles to cancel any license outstanding for a period of more than two years.

Successive legislatures continued to add amendments to the law designed to eliminate unsafe drivers. In 1935 another amendment eliminated the two-year license and permitted licensees to hold their licenses for four years before being required to renew them.

In 1940 and 1941 the department issued a series of orders canceling all licenses issued prior to 1929. These licenses had been granted without examination and were termed "Good Until Revoked." Since many of these drivers had developed bad driving habits in the interim, they were required to appear before the department for examination and renewal of license if they intended to continue to drive. Today, licenses are issued on a two, three and five-year basis, depending upon promptness of renewal and the applicant's past record.

Guide Manual Used

Like the Division of Registration, the procedures for issuance of drivers licenses and the examination of applicants for licenses are contained in the Drivers License Examiners Manual of Procedure. A copy of this manual has been submitted to the committee.

The number of drivers licenses issued is, of course, very closely related to the increasing population and the number of persons of driving age, as well as to the increasing incidence of vehicles among the population. As of the end of June 1960, there were in excess of 7,900,000 valid license holders in California. Official estimates for the future are as follows:

1965	9,950,000
1970	12,200,000
1975	14,500,000
1980	16,800,000

One important factor affecting the short-term workload of drivers license issuance is the change in the license laws relating to the term of licenses and to birthdate expiration. Due to the coincidence in expiration dates of licenses issued for two- and three-year

periods under the new law with those of licenses expiring four years after issuance under the old laws, there will be an alltime record high of issuance during the fiscal year 1960-61 of about 3,225,000 drivers licenses. This compares to the issuance for fiscal year 1958-59 of about 2,280,000, or an increase of more than 40 percent.

The diversified term system which became effective in 1957 as an incentive to prompt renewal of licenses, and to reward drivers with good driving records, has increased administrative problems. The required verification of the driving record and subsequent audits to assure proper terming have taken their toll in increased costs of operation.

Also in 1957 the law was amended to require that photographs of licensees appear on each license. This is another example of service to the driving public. The photographic service is provided by contract at a cost of approximately 4.5 cents per print. This price promised a sizable savings to the State in the expense of producing photographs on licenses. However, problems have been encountered affecting both the quality and quantity of the photographs produced. The department is now considering prospectuses for new systems from which it is hoped full compliance with the law eventually may be obtained.

Equipment Aids Testing

In the examination of applicants for drivers licenses, every effort is made to utilize equipment which will expedite examinations and improve their quality. The installation of Ortho-Rater vision testing equipment to provide uniform vision test conditions in all of the examining points throughout the State is an illustration of the implementation of this policy. The department also has investigated mechanical testing equipment and driving simulators.

Approximately 95 percent of all licenses issued are operators' licenses. These permit the driving as an operator of any motor vehicle having an unladen weight of 12,000 pounds or less and permit the towing of any vehicle having a gross weight of 6,000 pounds or less. Persons wishing to have their operators' licenses endorsed to permit operation of vehicles in excess of these weights must first pass an appropriate examination. If a person drives professionally, or is employed by another for the principal purpose of driving, a chauffeur's license is required. Approximately 5 percent of all licenses issued are chauffeur's licenses.

Persons who desire to learn to drive may be issued an instruction permit, which is a type of restricted license allowing the holder to operate a motor vehicle while accompanied by, and under the immediate supervision of, a licensed operator or chauffeur 18 years of age or older. This type of license is valid for a maximum of six months.

As a convenience to the public, upon successful completion of a driver's license application, an interim driver's license is issued. This permits the successful applicant to drive while the application is checked against the central files at headquarters of the department, as required by law. This interim license is valid for 60 days.

The department also issues a slightly different form of temporary license valid for a 60-day period. It is issued when an application for license is under investigation and a final determination has not been made or when the license production procedure has been interrupted, causing a delay in issuance of the regular license beyond the 60 days allowed on the interim license. Such a license may also be issued to an experienced driver who has failed to pass the tests in such a manner that the issuance of a temporary license is not considered dangerous.

Whenever in the interest of safety the department considers it necessary, a driver license may be restricted with various conditions or limitations. Restrictions may require additional rear view mirrors, manually operated controls or mechanical signaling devices, or the license may be restricted as to area, location or time of driving. The restriction requiring the wearing of adequate corrective lenses comprises more than 90 percent of all restrictions issued.

Compare Favorably

California standards in the field of driver license examination and issuance compare favorably with national standards. Experienced and qualified personnel from California have participated actively and extensively throughout the years in the development of recommended national standards through such organizations as the American Association of Motor Vehicle Administrators, the Northwestern University Traffic Institute and the National Safety Council.

In 1957, the American Association of Motor Vehicle Administrators published a manual for driver licensing authorities in the examining of applicants for drivers licenses. By and large, the California standards are in close conformity with these recommended standards. There are a few differences such as the age requirement in California for a chauffeur or a school bus driver which is 18 years as compared with the national recommendation for 21 years.

In vision testing, visual acuity recommended for screening standard is 20/40 in each eye; in California it is 20/40 in the best eye with vision to 20/67 permitted in the poorer eye. The recommended score for passing the test on traffic rules is 80 percent; California's passing score is six errors out of 40 true-false type questions, or 85 percent.

The value of setting high standards for the operation of motor vehicles has been demonstrated repeatedly. The people of the State have every right to inquire into the ability of every driver to operate his vehicle so he will not endanger the lives and property

of others. Since the qualifications of the individual change over a period of years, it is necessary that the State check the driver at intervals to determine whether or not he still is able to meet all the requirements for safe driving.

The department can determine by examination whether a person is capable of driving a car safely, but it cannot determine in advance whether the person actually will drive safely or give sufficient consideration to the rights of others to drive upon the highways. However, from reports received from various sources, from records of accidents and of convictions for violating traffic laws, the department soon is able to discover whether a person is actually driving in a safe manner with reasonable consideration for the rights of others.

The Vehicle Code gives the department broad powers in the revocation or suspension of licenses. Some are mandatory and some are discretionary but in every instance they constitute another of the department's services to the public since they are intended to protect the public from unsafe drivers.

Some 40-odd years ago, basic reasons for withdrawing licenses began to emerge. Though it may not have been recognized immediately, these reasons fell into general categories.

1. The commission of a specific public offense, so fraught with danger and looked upon as so serious as to make a loss of license necessary in the interest of safety.
2. The commission of a public offense recognized as extremely serious and one in which the opportunity for repeat would be diminished by the withdrawal of a license.
3. Failure on the part of a person to meet civil obligation arising out of the use or ownership of the motor vehicle.

An example in the first category might be manslaughter or driving under the influence of intoxicating liquor. It was recognized very early that if a person killed another with an automobile, and he was culpable because of this homicide, the driving privilege should be withdrawn.

An example in the second category might concern a number of felonies in the commission of which a motor vehicle was used or perhaps was incidental.

In the third category, of course, we have the suspension for failure to satisfy a judgment arising out of a motor vehicle accident.

As the saturation of automobiles became greater and greater and as society began to lean more and more upon motor vehicle transportation, the significance of driving and the privilege of driving has become more and more impressed upon the public. This, of course, has brought the necessity to recognize the importance of proper control of drivers for protection of the greatest number of other drivers.

Notable refinement in the reasons for driver control is the development of the principle that driving habits and practices as demonstrated by a pattern of frequent offenses, no one of which would bring about the loss of license, might cause a person to be a menace to other drivers.

The definition of a negligent operator first appeared in the Vehicle Code in 1947. This and the other basic causes for withdrawal of license have remained pretty constant through the years, but it safely can be said that those engaged in driver control work have become more sophisticated in the use and application of the various reasons for license withdrawal.

Much study and thought have been given to the methods of applying control bases in determining the periods of loss of license, in determining administrative methods to institute the action, to follow up on the action to assure compliance, and to use statistical information to determine the effectiveness of the various actions taken.

It should be remembered that in its more highly refined application, driver control is applied to the problem of improving the quality of specific drivers and drivers generally rather than just removal of certain drivers from the road.

The principle of merely being concerned with ending certain driving privileges would seem to be to fail to recognize any possible opportunities of improving the quality of drivers ahead of the point where withdrawal of license is necessary.

The very earliest corrective efforts are, or course, related to the expansion through the years of the examining procedures before licensing.

The refinement of this is the driver improvement operation in which an attempt is made to evaluate an accumulating record and to learn from certain offenses possible sequel consequences so that preventive steps can be taken in the interest of certain individuals and the driving public generally.

Driver applicants take road test.

One of the more recent refinements of the driver control program was contained in the legislation requiring that further license be refused to any person who had failed to answer his signed promise to appear in court on a traffic citation. This is a further tying together of the privilege to use the roadways with the obligations expected of the user of those highways.

We are primarily concerned here with the refinement of the philosophy of driver control and driver improvement through licensing and post-license methods.

Today the following processes are significant:

The issuance of about 10 percent of our licenses for short terms because of excessive traffic tickets. This is, of course, a significant driver control activity.

The issuance of perhaps 15 percent of the licenses restricted with requirements designed to increase safety, or reduce hazard if said in another way.

The refusal to issue to a substantial percentage of applicants until further study and qualification effort had been expended.

The withholding of a number of licenses pending answering of unsatisfied citations.

The suspension and revocation and the imposing of probation in a substantial number of cases.

Perhaps one of the more interesting aspects is demonstrated by merely listing the reasons for which these licenses are withdrawn:

Drug addiction, drunken driving, failure to appear, failure to surrender license, fraudulent application, habitual drunkard, hit and run, illegal use of license, lack of skill, lapses of consciousness, mental disability, negligent operator, physical disability, reckless driving and violation of restrictions.

In the future many changes will probably take place in the administrative methods and causes concerning license issuance and withdrawal, but the basic reasons for acting against the driver will probably remain pretty much the same because they are taken in the interest of the overall driving public and not taken merely to bring about "punishment" of a single errant driver.

Departmental actions by years:

Year	*Suspensions*	*Revocations*	*Totals*
1940	15,806	2,214	18,020
1941	20,216	2,712	22,928
1942	12,265	2,316	14,581
1943	11,093	2,519	13,612
1944	9,417	2,620	12,037
1945	11,818	2,725	14,543
1946	24,646	3,844	28,490
1947	28,163	4,285	32,448
1948	32,256	4,386	36,642
1949	24,241	5,368	29,609
1950	17,072	6,174	23,246
1951	19,434	6,464	25,898
1952	20,860	8,183	29,043
1953	21,856	10,271	32,127
1954	22,757	9,429	32,186
1955	27,065	11,945	39,010
1956	27,718	12,952	40,670
1957	34,263	13,799	48,062
1958	40,512	18,225	58,737
1959	68,136	18,846	86,982

Fred P. Williams (left), chief, Division of Drivers Licenses, Department of Motor Vehicles, and Martin H. Barclay, assistant office manager, inspect newly installed open-shelf filing for physical and mental files.

The importance of filed records to the effectiveness of the driver improvement program cannot be overemphasized. It has been estimated that the driver record file contains approximately 40,000,000 pieces of material, including applications, changes of address, abstracts of court conviction and so forth.

Fertile Research Field

These records constitute a fertile field of research. For example, in 1948 a study was made of 1,039 negligent operator cases evaluating the driver performance before and after various driver improvement actions. In approximately 85 percent of all cases contacted there was improvement shown afterward.

In 1958, the department studied a sample of some 95,000 drivers selected at random from the entire body of more than 7,000,000 drivers. This study revealed, among other things, that the "average" California driver was likely to have a clean record; that there is a definite relationship between traffic convictions and traffic accidents, and that older drivers tend to have better records than younger drivers.

A study of various vision factors and different types of tests with and without glasses, and their relationship to driving performance was made during 1959. Currently in progress is a survey of 4,000 negligent operator cases where some action was taken by the department in late 1955 or early 1956. It is intended to study the driving performance of the principals in these cases for three years before and three years after the departmental action.

At some future date the department hopes to make a scientifically controlled study of the effect of driver improvement actions by selecting in advance carefully matched cases with all conditions and factors being comparable or equal. They would then be divided into two groups with certain actions being applied in one group while they are deferred in another. The results in terms of subsequent driver performance would then be carefully evaluated.

Again, emphasis must be given to the demands made upon departmental files from outside sources for information. In addition to the departmental need for drivers license information in the conduct of daily operations, last year 3,098,742 individual requests for information were serviced of which approximately 95 percent were fee-paid items. A staff of approximately 150 persons is required to handle this workload. For this purpose two shifts are maintained on this largely self-financing program.

Since all signs point to even greater use of the motor vehicle during the next two decades, there is every reason to believe that the examination and regulation of drivers will grow and perhaps become more strict as time goes on. The major component of highway safety is and will continue to be the man in the motor vehicle and his knowledge of safe driving practices.

Most certainly, the increasing attention given to the driver as an individual whose behavior in certain situations may vary according to emotional and psychological pressures, emphasizes the need for increased research in isolating the many variables concerned.

The need is extremely pressing for research programs in such fields as: (1) the relative effectiveness of various types of driver improvement actions; (2) skills needed for safe driving; and (3) the role of vision and all its components in safe driving. There also is a real need for research leading to the development by professional people of tests which can easily be administered by regular driver examiner personnel.

Mechanization of driver's license procedures also holds promise of a solution to the anticipated heavy increase in workload in the future as mentioned previously. The department already is embarked upon a minor operation of this type and is researching development of a more elaborate system adaptable to driver's license functions in field offices as well as in headquarters. Driver's license operations have not kept pace with registration operations in this respect because of the lack of suitable equipment but with the development of more and more flexible types of electronic data processing systems, the time is fast approaching when driver's license, too, can become mechanized.

Violations Reports Required

It is important that steps be taken to improve compliance with the law requiring the reporting of traffic offenses to the department. Since the addition of Section 1816 to the Vehicle Code in 1959, juvenile courts, probation departments and others responsible for the disposition of cases involving traffic offenses by minors have assumed various interpretations of the reporting requirements. All traffic offenses whether violations of the Vehicle Code or any other law should be a matter for inclusion in the driving record. Traffic offenses by drivers of all ages throughout the State should be handled by more uniform procedures.

It would be helpful to the department if improved physical and mental standards for drivers could be developed. Some steps have been taken in this direction in co-operation with the California Medical Association and the State Department of Public Health. But the program requires more acceleration, perhaps in conformity with the plan already suggested by the Department of Public Health.

Likewise, mobility of the nation's population has created a need for interchange of information in regard to drivers' records. Some moves in this regard already have been made in the form of suggested state compacts but the process of obtaining approval is exceedingly slow and the need for interchange of information becomes more acute each year.

The federal government already has entered this picture with passage by Congress and signature by the President of a bill directing the Secretary of Commerce to establish and maintain a registry of persons whose drivers licenses have been suspended or revoked following convictions for certain offenses.

There are increasing indications that persons whose licenses have been suspended or revoked frequently ignore such orders and drive in spite of them. This practice weakens the validity of the entire driver licensing system and the respect for licensing laws. Many safety groups have suggested that a jail sentence would serve to increase respect for the law.

Financial Responsibility

The third major function within the Department of Motor Vehicles is that of *Financial Responsibility*. This operation was authorized by the Security Following Accident Law enacted in 1947 and effective July 1, 1948. The purpose of the law is to protect persons from financially irresponsible owners and drivers of motor vehicles. It is not a compulsory insurance law although insurance provides one means of demonstrating Financial Responsibility. It is strictly a service to the public and is carried on without fee.

The Financial Responsibility operation is an entirely self-contained function within the Division of Drivers Licenses. It has a staff of approximately 150 persons whose duty it is to receive reports of accidents and other information required to determine if drivers involved in accidents with more than $100 damage to any one vehicle, or death or bodily injury to persons, have met the requirements of the law.

During fiscal year 1959-60, a total of 501,542 accident reports were received by the Financial Responsibility function. In addition, there were almost half a million pieces of mail handled, exclusive of reports. Roughly 85 percent of all drivers reporting are covered by adequate insurance at the time of the accident.

In Leased Quarters

The workload of the department has grown to such an extent that the entire Financial Responsibility function is no longer housed in the departmental headquarters building. It currently operates in leased quar-

ters at 21st and J Streets. This makes for inconvenience and inefficiency in operation since close liaison must be maintained at all times with the other operations of the Division of Drivers Licenses and the Division of Registration. This situation is expected to improve with completion of a new Department of Motor Vehicles headquarters building, scheduled for late 1962.

Staffing of the Financial Responsibility function must be maintained at a level capable of handling peak loads promptly because of the statutory time limits within which certain actions must be taken.

The most logical approach that the Financial Responsibility function can take to future planning is in the continual training and recruitment of personnel in order that a highly efficient staff will continue to be maintained. In this connection it is worthwhile to note that recruitment of damage and injury evaluators has not been as successful in recent years as it was when the law was enacted. This is because the Financial Responsibility function is required to compete salary-wise with the insurance industry for this type of employee.

Much of the present thinking in regard ro Financial Responsibility must be governed by present studies of the need for an automobile accident commission as contemplated by the terms of Senate Concurrent Resolution No. 32 of the 1959 session.

Occupational Licensing and Business Regulation

The department's occupational licensing and business regulation function is divided into several subfunctions, the principal groupings being those of licensing driving schools and driving instructors and the licensing and regulation of manufacturers, transporters, dealers and salesmen.

The functions of licensing and regulating private driving schools and driving instructors is assigned to the Division of Field Office Operations. Since the majority of the driving schools in this State are clustered in the main urban areas, departmental representatives in charge of those activities are located in Los Angeles and Oakland. The entire driving school program is co-ordinated from Sacramento where centralized records also are maintained.

Licenses issued to operators of private driving schools and their instructors are valid for four years. A full and complete examination is given upon both original and renewal licenses. It consists of four parts covering the Vehicle Code and driver licensing procedures, safe driving practices, motor vehicle operation and teaching methods and practices. Then a regular road test is given to applicants with a required passing score of 85 percent.

When this law became effective in 1954 there were some 200 driving schools licensed throughout the State. Through the efforts of organized driving schools, the application fee for a license to operate a driving school was raised from $50 to $250 and orher more stringent requirements were written into the law. As a result of this series of amendments, the total number of licensed driving schools has declined ro the present 150.

Roughly, two out of three of all driving schools and driving instructors are located in the Los Angeles area. There are approximately 400 driving school instructors licensed for the 150 schools.

Schools Inspected

In addition to the acceptance of applications for driving schools and instructors licenses and the examination of applicants, the department also conducts a semiannual inspection of all schools, including the vehicles used in driving instruction and training, the place of business and general premises and the records maintained of instruction performed.

A large portion of the administrative expense involved in handling the driving school program is due to disciplinary actions involved. During the last two years there have been about 10 cases of actions initiated leading to hearings. These required extensive investigative and case preparation work before submission to a hearing officer of the Division of Administrative Procedure. These actions are in addition to summary suspensions without hearing when driving school operators or instructors for one reason or another lose their drivers licenses or fail to maintain the required insurance.

Another item of considerable workload for departmental personnel is the gathering of evidence for city attorneys and other local officials in order for them to prosecute violators.

Business Regulated

The second subfunction in the regulatory field is that concerning manufacturers, transporters, dealers, wreckers and vehicle salesmen. The laws relating to manufacturers, transporters and dealers became effective September 11, 1957, while those relating to vehicle salesmen became effective July 1, 1958. The automobile wrecker regulation laws, enacted in 1941, have been an established part of the Vehicle Code since that date.

All functions and operations of the department relating to manufacturers, dealers, transporters, vehicle salesmen and automobile wreckers are performed by the Investigation Section of the Division of Registration. Like the Financial Responsibility function, the Investigation Section is domiciled at 21st and J Streets, an inconvenient location in view of the section's constant need for file reference. This situation, too, will be corrected by completion of a new headquarters building.

The primary assignments of this section are carried out by a staff of investigators working throughout the entire State with many local headquarters in depart-

mental field offices. The section performs all work necessary to determine the qualification and fitness of applicants for the various types of occupational licenses. It conducts the investigations required by law and makes appropriate recommendations for the granting or issuance of licenses. The investigative staff also performs whatever duties are required to insure that all requirements of the laws affecting manufacturers, dealers, transporters, salesmen, wreckers and their employees and agents are complied with.

Another function of the investigative staff, not related to the previous one, is the serving of briefs and the enforcement of compliance upon those persons whose driving privileges and registration privileges have been suspended or revoked. This staff also assists in the apprehension of violators of the occupational licensing laws and performs some work in the assistance of those charged with the recovery of stolen vehicles.

50,000 Briefs Served

One of the major workload items for the investigative staff is their service of briefs. It is estimated that more than 50,000 briefs were served during the fiscal year 1959-60 at an expenditure of approximately 70,000 man-hours. During the same period approximately 8,800 complaints against licensed dealers and wreckers were investigated. A total of 7,700 investigations of complaints against individual vehicle salesmen also were conducted. Original applications for dealers, wreckers, manufacturers and transporters during the fiscal year required 5,640 investigations. Investigations of dealers and wreckers arising out of violations of laws and regulations totaled another 1,500.

During fiscal year 1959-60, activities of the Investigation Section produced $225,000 in fees which normally would not have been collected. They were uncovered as a direct result of detailed investigation of a dealer or wrecker.

There are no particular developments in view which would appear to have an effect upon the future regulation of these various automotive occupations. Some interest has been indicated in extending authority of the department to regulate automobile deals; that is, to investigate, upon complaint, the terms of individual transactions. It is felt that this falls definitely within civil jurisdiction. Expansion of departmental duties and responsibilities in this field would entail tremendous expansion of the investigative staff, a move which could not be justified in view of the need for greater economy in the operation of State Government.

Highway Patrol

From Testimony by Bradford M. Crittenden, Commissioner, Department of California Highway Patrol

In every land transportation system there has existed the three elements of roadway traffic, vehicle and load, the driver, and the pedestrian.

The participation of the Department of California Highway Patrol in the management of the transportation system is concerned specifically with the elements of control. These elements may be segregated into five major functions: *regulation*, *inspection*, *enforcement*, *records*, and *services*, and these are related to the operational elements of the automotive transportation system as they apply to 68 billion miles of travel, 8 million vehicles, and 8 million drivers.

In the departmental operation the above five functions may be further defined by the segregation of the activities peculiar to each of these major processes. This implementation is as follows:

The process of *regulation* is devised and maintained through the creation and administration of statutes, administrative regulations, physical control, and signing. The process of *inspection* considers the aspects of observation, investigation, record review, and research. The function of *enforcement* envisions the process of the issuance of citations and warnings and the accomplishment of detention and prosecution. The function of *records* is a composite of the collection, preparation, analysis, and accumulation of data. The last and most recently developed major function is to be found in the provision of *services*. These services may be developed into the subtopics of removing impediments, expediting movement, relieving hardship, and education.

As may be seen by the breakdown presented here, the elements of control which form the basis of the department's operation consist of numerous processes, each related to the other and bearing directly on the efficiency and safety of today's roadway system.

The primary problem of operating a land transportation system is the problem of accidents and congestion. The extent of this problem is determined by the number of vehicles using the roadway and the velocity at which they travel.

The insertion of the automobile into California's land transportation system injected the problem of high velocity with its attendant destructive force. At the same time, the growth in the number of vehicles subsequent to World War I far outdistanced the growth in space available on our roadway system. This crowding resulted in impacts which increased in destructiveness as added horsepower and smoother roadways constantly raised vehicle speed.

Speed also increased the length of trips possible to motorists and with this development the situation where a citizen traversed multiple jurisdictions in one day's travel caused the need for uniform regulations.

Also, as economic loss and suffering from accidents grew with increased velocity of operation, it became evident that uniform measures of statewide control must be instituted. As usual, in our democratic society, these regulations took the form of directives initiated through legislative process. As in all other problems of regulation, the more complex the relationships among those regulated, the greater the need for regulation.

Regulation

In effecting *regulation* of the automotive transportation system the means utilized have been to require or prohibit certain acts on the roadway, and set standards for the condition of vehicles and capabilities of drivers. The structure of duly constituted authority existing for administration of criminal justice has also been used for administration of traffic control regulation. Thus, the normal process of the legislative, judicial, and executive branches of government have been brought to bear in the creation, administration, and enforcement of these laws.

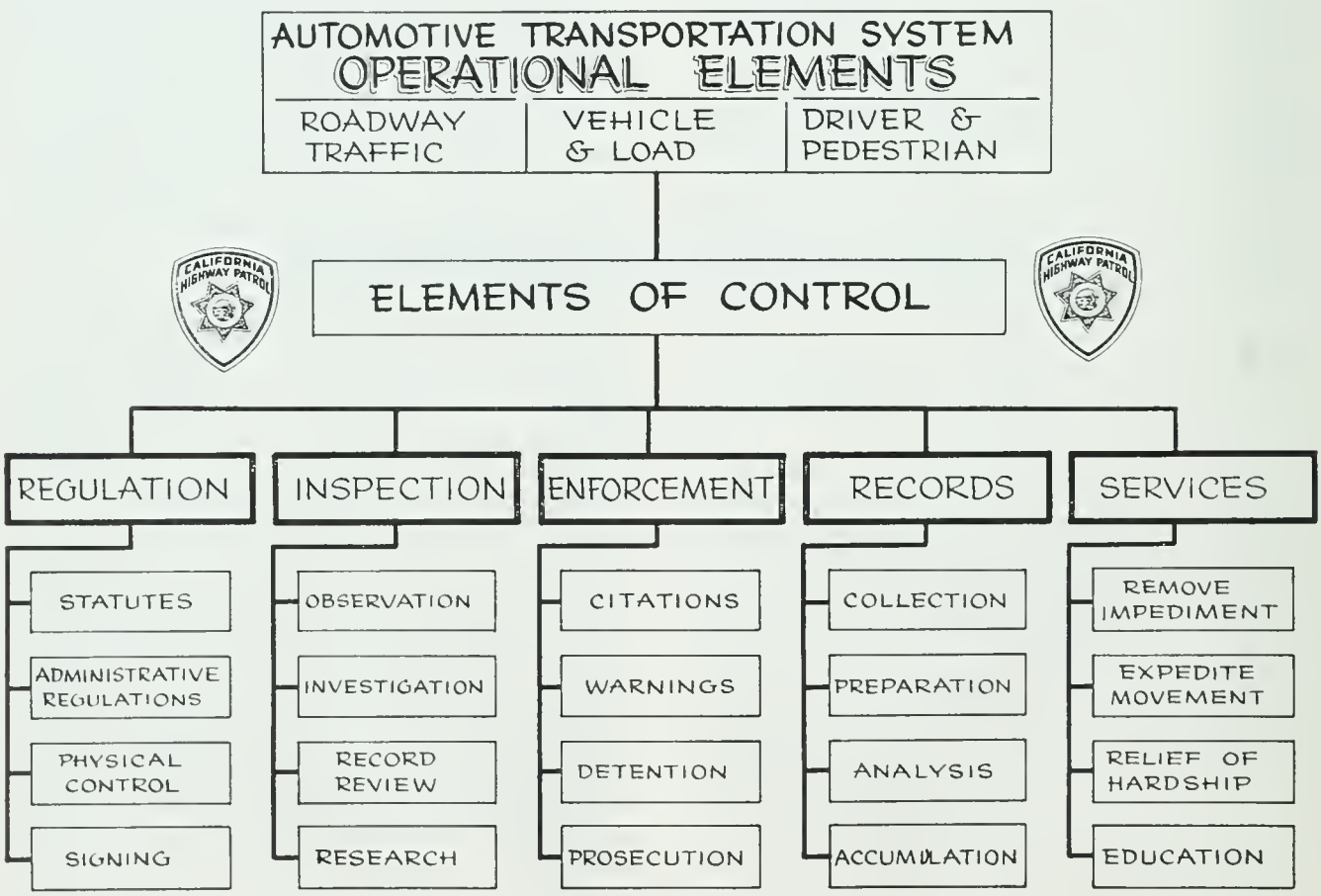
In the instance of traffic control regulation, prohibited behavior is not necessarily evil by nature, and for this reason there has been allowed some exercise of individual interpretation within the structure of the legislative directive, or law. This philosophy has led to such problems as requiring a motorist to proceed at a speed which in his judgment is safe, only to find that his judgment does not coincide with that of the officer or the court.

In the past 15 years the practice of delegating regulatory authority to the department by the Legislature in certain technical fields has shown rapid growth. In the year 1946, which was the first year regulations were published by this department in the Administrative Code, there were 11 items covered. By 1950, this number had grown to 17 and in the year 1960 we find that 25 subjects are now submitted to this type of control.

Research Conducted

Realizing that this delegated authority implied the necessity for research in the technical fields to be regulated, the department has created the necessary scientific resources to fulfill the obligation. Through testing laboratories at the University of California, and through specialized equipment within the Special Services Section of the department, constant research is carried out regarding desirable improvements in various types of equipment.

As many of the subjects dealt with directly concern certain commercial interests such as the trucking industry and automotive manufacturers, it has become a practice to co-ordinate the research results with the practical knowledge of the respective groups prior to the regulations being formulated and published. This practice has resulted in increased compliance from those regulated and, by the taking advantage of their specialized knowledge, has contributed to a more practical and workable type of regulation.



Another major reason for this type of regulation is its versatility in dealing with new developments in the automotive transportation field between sessions of the Legislature. This can be demonstrated by reviewing recent developments, such as transportation of radioactive materials, smog control measures, and testing of air brake systems.

With the authority to formulate regulations has come the responsibility to publish these in a form that can be understood by those regulated. This requirement has called for constant effort in order to publish and keep current all bulletins involved in this type of regulation.

The Vehicle Act of 1929, Section 111½, provided the department statutory authority to appoint official headlight and brake testing stations. The department was also directed to supply instructions to, and supervise the activities of these stations which at that time were only accountable for headlights, auxiliary driving lights and brakes.

In 1935, the California Vehicle Code was enacted and Section 665 therein relating to these stations changed the title to official lamp and brake adjusting stations and added fog lamps to the list of items to be inspected and certified. Through the years, subsequent amendments to the Vehicle Code have included additional lamps and devices to this list. Today, all lamps, lighting devices and braking systems must be checked for compliance with the Code, as well as with the regulations of the department.

The purpose of these official stations is to provide a location where any person may have his vehicle inspected to determine if the lamps, lighting equipment and braking equipment are of a type approved for use and are adjusted as required by the Vehicle Code and Department regulations. If, after inspection, the vehicle is found to comply with these requirements, an official certificate furnished by the department is issued evidencing compliance.

Emergency Vehicle Permits

Authorized emergency vehicle permits and red light permits are also a part of the administrative regulation activity of the department. An authorized emergency vehicle is a vehicle designated as such by the California Vehicle Code while being operated in response to emergency calls, or while engaged in rescue operations, or is being used in the immediate pursuit of an actual or suspected violator of the law, or is responding to, but not returning from, a fire alarm. It also provides for the operation of fire department vehicles from one place to another as necessary by reason of an emergency call. These vehicles are extended the privilege of right-of-way and are exempt from certain other provisions of the Vehicle Code relating to rules of the road, provided the driver sounds a siren as may be reasonably necessary, and the vehicle displays a red light visible from the front as a warning to other drivers and pedestrians.

These vehicles generally are divided into three major classes: police, fire and lifesaving, and emergency repair vehicles. The 1959 Vehicle Code defines 21 different types of authorized emergency vehicles, 12 of which as a condition of designation and operation must first obtain an authorized emergency vehicle permit from the Commissioner of the California Highway Patrol. On July 1, 1960, a total of 1,949 authorized emergency vehicles were being operated under permits issued by the department.

Enforcement of all Vehicle Code requirements and regulations of the State Board of Education governing pupil transportation is the responsibility, under law, of the California Highway Patrol. All school buses used for the transportation of pupils to and from public and private schools, and to and from public and private school activities, and their drivers, are subject to inspection by the officers of the California Highway Patrol within one year previous to the date of operation for that year.

This requirement necessitates the inspection at least once a year of the 7,300 school buses transporting pupils of the public schools, and the 800 school buses transporting pupils of private schools. In addition to the yearly inspection required by the Vehicle Code, these vehicles are strictly and uniformly reinspected by officers of the Patrol from time to time to insure that pupil transportation may be effected with a maximum of safety. Any school bus declared unsafe by an officer must be immediately discontinued from use, and not placed in service again until made safe and approved by a competent mechanic and an officer of the California Highway Patrol.

Law Covers Explosives

The regulations governing the transportation of class A and class B explosives by vehicles upon the highways of this State are contained in Division 14 of the California Vehicle Code. The responsibility for the enforcement of these statutes and the issuance of the necessary permit to transport explosives was assigned

School bus inspection.

Emergency traffic controls.

to the department by the 1957 Regular Session of the Legislature. These regulations apply to the operation of any vehicle upon any highway in this State when any class A or class B explosive in any amount is transported as a delivery service or for hire, or any other event when the amount of explosives is in excess of 1,000 pounds.

The 1959 Regular Session of the Legislature added to the California Vehicle Code special statutes relating to the transportation of farm laborers in farm labor trucks and buses. These vehicles are subject to the administrative regulations adopted by the department, the General Safety Orders adopted by the Division of Industrial Safety, and the statutes of the California Vehicle Code.

During the Regular Session of the 1959 Legislature the department was directed to draft regulations governing the safe transportation of sheets, rods, coiled sheet, beams, pipe, and other metal products, upon the highway. Due to the vastness of the field it was decided that the regulations should be drawn up in sections according to the types of metal product.

An extensive survey has been undertaken by the department to determine the safest and most economical method of securing sheet steel in coil form, after determining that this type of metal product has been responsible for the greater number of accidents, and at the present time these regulations are being drafted.

Armored Cars Regulated

An armored car is defined in Vehicle Code Section 115 as a vehicle that is equipped with materials on either the front, sides or rear, for the protection of persons therein from missiles discharged with firearms. Vehicles so equipped are prohibited from operating on any highway unless a permit has first been obtained from the Commissioner of the California Highway Patrol, as provided in Section 21713 of the Vehicle Code. On July 1, 1960, 260 armored cars were operating under permits issued by the department.

Manufacturers desiring to sell specified devices must apply to the department for approval and send two samples of each device to the University of California, Richmond Field Station, which has been designated by the department as the official testing agency under contract to this department. The testing agency runs the necessary tests specified in the regulations and furnishes the department with test reports showing compliance or noncompliance with the regulations. If the device passes, a certificate of approval is issued; if it fails, the manufacturer is given detailed reasons for the failure and suggestions are made for the improvement of the device so it may be submitted for retest.

The responsibilities assigned to the department in the approval of devices and development of regulations have increased to such an extent that the size of the engineering unit has increased from two in 1957 to six in 1960. Last year, 708 shipments of samples for testing were received at the University of California testing agency and 421 certificates of approval were issued by the department.

Traffic Controlled

Authority is given to the members of the department to exercise immediate physical control of traffic under emergency conditions notwithstanding existing laws or regulations. The necessity for this type regulation has grown in almost direct proportion to the factors of accidents and congestion and today requires the time of many officers in its accomplishment.

The process of signing or accomplishing signing and markings for direction and regulation of motorists illustrates the close relationship between the Department of Public Works and the Highway Patrol in many aspects of the control function. While the Department of California Highway Patrol does have a responsibility for protecting signs on the roadway, reporting damage to them and recommending the need for increased signing, the primary responsibility for their establishment lies in the Department of Public Works through its Division of Highways.

This same relationship is found between the Department of Highway Patrol and the Department of Motor Vehicles in regard to administrative regulations covering the drivers license function and the registration of vehicles. It should be noted, however, that the enforcement of all statutes and administrative regulations propounded by other agencies are the primary concern of the Department of California Highway Patrol.

In the process of *regulation* little can be accomplished without some measure of *inspection* to determine the extent to which regulations are effective, applicable, and the measure of compliance they are being afforded.

Inspection

The function of *Inspection* as employed by the department, can be categorized by its immediacy and with consideration of the scope of the factors inspected. It is divided into the activities of observation, investigation, record review, and research.

Observation, as utilized by the California Highway Patrol, is a systematic surveillance of the driver, vehicle, and roadway, for the purpose of detecting the needs for control that arise through vehicular traffic. It is specifically concerned with facilitating rapid movement of vehicles and in assuring maximum compliance with laws formulated for the prevention of accidents.

In the case of the traffic officer, primary consideration is constant surveillance of a beat to which he is assigned. His immediate concern is that he must be made aware of any occurrence which will jeopardize either the safe or rapid movement of traffic. These occurrences can be of such a significant nature that lacking immediate attention, a problem may develop which could result in injury or loss of life, or cause the loss of thousands of hours of time in traffic tieups.

Demonstration of this problem can be found in consideration of the situation where a drunk driver proceeds down the wrong side of a busy freeway, or a vehicle tows a trailer through heavy traffic with the hitch broken or separated. Matters of less expediency include the case of the motorist disabled in an isolated desert area and in need of assistance before his situation becomes perilous.

To accommodate available manpower to this need, coverage ranges from on-call service in sparsely populated areas during late hours, to a workable minimum of 2.7 men per mile per 100,000 average daily traffic flow on our busiest freeways. It is in this field of constant supervision that the lack of manpower is most acutely felt. Failure to be aware of the need, and to deliver immediate service, results in strident complaints from the citizen.

Offenses Investigated

The next category of *Inspection*, classified as Investigation, begins ordinarily after a crime has occurred and may extend statewide in its scope, and cover a period of months in the more complex situations. While calling for a relatively small expenditure of manpower, its necessity can be found in the fact that it deals with the administration of justice in the more gross and serious violations of the law.

As utilized by the department the process of Investigation is brought to bear in those cases concerning the operation of motor vehicles where the class of offense is of such a severe nature that the violator will intentionally attempt to obscure the happenings attendant to the violation. That class of offense referred to consists of auto theft, hit and run, injury and fatal accidents resulting from excessive drinking, and other similar gross violations.

In such cases the violator is often tempted, either through momentary panic or deliberate intent, to evade responsibility and punishment and attempt to conceal those aspects of the incident that would place him in jeopardy. It is with this in mind that the department considers as a part of its obligation, the conducting of a scientific and systematic search for the purpose of gathering all the necessary facts and preserving the evidence required to obtain the apprehension and prosecution of persons responsible for these crimes which have more serious social consequences.

Authority in Law

Specifically, the Legislature has granted to the department the power to conduct such investigation not only at the scene of the incident, but also within certain privately owned public business establishments such as garages, repair shops, parking lots, and used car lots. In those instances the primary purpose served is the locating of stolen vehicles, or investigating their title and registration.

It appears obvious that this particular phase of the department's operation must be conducted successfully and continuously in order to impress upon violators the futility of attempting illegal flight, and also to instill in them the awareness of reasonable certainty of apprehension. Unless this activity is conducted successfully, the entire process of accident reporting may break down and the safeguards provided for guarantee of ownership become meaningless. Such a situation could develop into a complete collapse of the present control structure. Without competent investigation it would be more advantageous for one to neglect to report an accident in which he was involved, and which may have caused bodily injury or death, than to face up to his community responsibility.

Central Files Maintained

In maintenance of central files covering stolen vehicles, the department provides for expediting the return of stolen cars to their owners. This has two definite values. First, it relieves much of the financial hardship caused by citizens being deprived of their vehicles for extended periods of time. Second, it removes abandoned vehicles from more or less secluded spots, which in turn greatly reduces the encouragement for car stripping. As car stripping is often the

first step to juvenile delinquency, the reduction of this opportunity to commit crime is of major importance.

Automobile theft is an ever-increasing problem, accounting for a loss of unrecovered vehicles, stolen parts, and damage, in excess of $3,000,000 annually in California. This presents the greatest single monetary loss of all felonies and, in addition, is a contributing factor to many other criminal acts.

The necessity for an effective prevention program is indicated by national statistics. There is a close relationship between the auto theft problem and juvenile delinquency. Nearly two-thirds of all auto theft arrests are of persons under 18 years of age. Some idea of the size of the problem is shown when it is revealed that auto thefts in California increased from 14,791 in 1950, to 29,027 in the year of 1959.

Commercial Vehicles Inspected

A specialized form of inspection is found in the practice of examining commercial vehicle units with regard to the many and varied pieces of equipment, and loading requirements, as set forth in the Vehicle Code. Due to the technical nature of commercial vehicle safety requirements this field of inspection and enforcement is specialized, requiring considerable training and experience of personnel to assure proper control.

At the present time, a new type scale location is being established to facilitate a more thorough and inclusive inspection process. This facility will require the establishment of special nonuniformed civil service classifications designed to attract employees who may be capable of performing the more complex inspection processes, thereby relieving uniformed members for duties more appropriate to their classification.

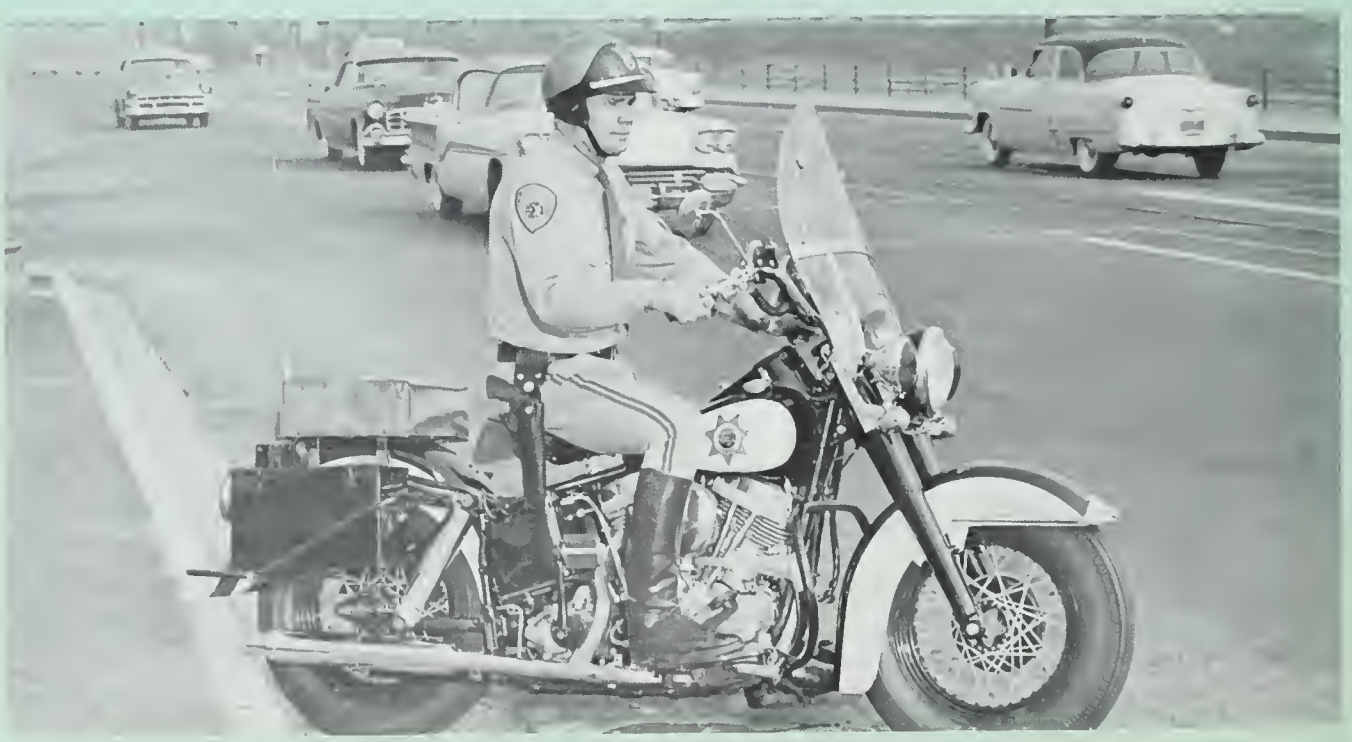
The majority of scale, weight, registration and equipment inspections are performed at platform scale locations established at key points on major highways throughout the State. In addition to these permanent installations, the department maintains mobile units containing scales for the purpose of inspecting commercial vehicles in locations which are somewhat isolated, and which are not readily accessible to the permanent platform installations.

In the metropolitan areas, automobile and motorcycle patrol officers perform commercial enforcement when appropriate, and in so doing, require weight violators to proceed to the nearest public scale for inspection. During 1959, members of this department inspected 1,934,193 commercial vehicles. This inspection process resulted in overloads removed or adjusted in the amount of 53,002,100 pounds, and approximately 8.4 percent of the drivers or owners of the vehicles inspected were cited for failure to comply with applicable statutes of the Vehicle Code.

Records Are Studied

The third activity within the *inspection* process is concerned with the immediate review of records which are produced as a result of the officer's daily work on his assigned beat. This record review provides for comparison and contrast studies, and the resulting intelligence provides a basis for a redeployment of manpower to meet developing problems. It ordinarily concerns a daily or weekly period of scrutiny and its scope is confined to the boundaries of a command area.

Officer keeps protective watch over traffic flow.



The final categorization of *inspection* is that of research. This aspect considers the examination of accumulated data for the purpose of changing methods, anticipating problems, or as a basis for planning. Its scope envisions comparison and contrast of data which can cover areas ranging from beat information to experience obtained in other states. Of necessity, it must also deal with as large a time span as is possible in order that the validity of projections and planning may be increased.

All of these processes of inspection must be exercised in order that an intelligent solution can be found for both immediate and long-range problems.

Enforcement

When *inspection* reveals that the authority behind *regulation* is being disregarded it has ever been necessary to demonstrate the need for compliance by application of the *enforcement* process with resultant penalization of those who do not comply. This enforcement process requires that officers take appropriate enforcement action for each and every violation of the law witnessed by them. Such action is accomplished in a businesslike, firm, fair, impartial, courteous, and uniform manner, using one of four methods:

1. By physical arrest in those cases provided by law.
2. By issuance of a notice to appear (commonly called a citation).
3. By issuance of a written warning.
4. By issuance of a verbal warning.

In accident cases, violations not witnessed by an officer, but found provable following thorough investigation, are processed by filing formal complaints as provided by law.

Whenever a member of the Patrol observes a motor vehicle operator whose physical or other condition indicates the need for a re-evaluation of his ability to drive a motor vehicle, in addition to enforcement action taken, he reports such facts to his area commander in writing immediately following his tour of duty. The area commander expeditiously relays this information to the Department of Motor Vehicles, Division of Drivers' Licenses.

The Department of California Highway Patrol is directly charged with the enforcement of the traffic laws of this State. These laws can be divided into four general categories:

First, the laws governing the movement of traffic over the roadways of the State. These laws are safety rules for the movement of motor vehicles. A violation of one of these laws is generally referred to as a moving violation. It is also an accident-causing violation.

Second, those laws having to do with the mechanical condition of motor vehicles themselves. These also have a safety basis.

Third, those laws having to do with licensing of drivers and vehicles.

Fourth, a miscellany of laws relating to vehicles.

Enforcement refers to all the laws the department is charged with enforcing. None is too small or insignificant to be overlooked; none too important to be stressed to the exclusion of any other. Every violation witnessed, requires enforcement action.

Uniformity Stressed

The department was created to provide uniformity of enforcement throughout the State. Obviously, to achieve this uniformity on more than 8,000,000 drivers of motor vehicles, some basic principles must be established. It is also obvious that the public policy of the State demands that each violator of the law be treated in a similar manner wherever he may be in the State. Chaotic conditions would result if every man in law enforcement were permitted to develop his own standards of enforcement of the law.

Four alternative enforcement actions are set forth. They are applied by every member of the department in accordance with departmental standards. The law of this State provides the following basis for the application of these enforcement actions:

1. Physical arrest in those cases where the law requires or permits this process. Where permitted and not required, the decision must be based on sound professional judgment.

2. Issuance of a notice to appear (citation) is a process permitted by law as a substitute for a physical arrest. It is a part of the arrest process which, in itself, is simply the method of bringing the violator before the court for adjudication of guilt or innocence, with suitable punishment in the case guilt is determined. It is a practical and humanitarian process developed over the years, and is gradually being extended to many regulatory fields.

3. Issuance of a written warning is a process developed to achieve compliance with the law governing the mechanical condition of motor vehicles without every violation resulting in arrest. Where noncompliance is demonstrated, however, the law contemplates that arrest and adjudication will follow the violation.

4. Issuance of a verbal warning is a procedure to be used when a violation of law is observed but the officer is not reasonably sure of the accuracy of his observation of the elements constituting the violation, or when in his professional judgment this type of enforcement action is obviously proper.

Thus, we have the four types of enforcement action to be taken, and a general standard for application of each. Every action taken by a member of the department must be governed by sound professional judgment, in accordance with departmental objective and duty.

Records

It is well recognized that *regulation* must be reasonable, *inspection* must be constant, and *enforcement* must be firm, fair and impartial, but none of these needs can be thoroughly evaluated without some record being maintained of the effects of these processes in action. In order to provide a scientific basis for evaluation of existing control practices and planning for future needs in this field, data must be collected and processed.

Records and resulting statistical reports are an integral part of the department's operation. Continuing and detailed analysis of data is necessary for proper evaluation of the activities for which the department is responsible. In addition, information is requested by many other agencies and individuals; information that is accumulated only by the department.

Four steps are necessary: collection, preparation, analysis, and accumulation.

The collection process involves the actual field work of obtaining information regarding those factors which affect the safe and rapid movement of traffic. Reports covering the daily activities and assignments of officers; citations by offense, time and location; accidents, fatal, injury and property damage by time, date, location, and cause; warnings and services performed, are forwarded to headquarters for accumulation, comparison, and analysis. A report is then produced by electronic equipment and sent to the field for the purpose of local analysis and deployment control. Finally, information from the various sources is accumulated in summary reports as a basis for research and planning.

Personnel who collect data and prepare the resulting reports must be thoroughly trained to insure validity of the information obtained. This information is ultimately used by: Highway engineers, to determine highway changes necessary and the planning of future construction; Courts, for determination of facts in cases heard; Department of Motor Vehicles, in cases of drivers license hearings and registration violations; the Department of Highway Patrol, for operational analysis, and as a basis for further scientific research; and civil courts and insurance adjustors, for equitable adjustment of civil liability claims.

Services

Through legislative directives the department has been required to implement the measures of control through administrative practices; however, in addition to the measures of *regulation*, *inspection*, *enforcement*, and *records*, there has evolved an allied process which appears to be an integral aspect of the control function. This is the process of rendering *services* to the motorist for the purpose of adopting recognized curative measures to his own individual problem.

It consists of supplying information to those who are confused; of supplying help to those whose vehicles are disabled; of rendering first aid or emergency treatment to those who are suffering physical disability or injury; and the last, but possibly the most important, is the supplying of training and education to those who lack the skill or the understanding necessary to safely and rapidly negotiate our roads system.

In government, the right to govern has ever been accompanied by the obligation to serve. This concept has so pervaded the functioning of democratic govern-

Road information for strangers.

Emergency blood delivery to hospital.

ment that it has become a traditional part of governmental structure from the level of the Legislator to the lowest governmental employee.

The uniformed members of the California Highway Patrol probably constitute the most easily recognized and readily accessible representation of government in California. For this reason there has developed a demand for individual assistance which has grown in proportion to the population and vehicle registration in California.

Deeply imbedded in the tradition of the California Highway Patrol is the practice of rendering service to the public. Unlimited in variety, these demands for service range from time expenditures of mere minutes to periods of several hours' duration. The California Highway Patrol has for some time been interested in knowing the size of the problem of performing services of this nature.

Since the beginning of 1960 the department has instituted a program of recording the various services rendered. Records for the first six months of 1960 reveal that members of the California Highway Patrol performed 397,000 separate acts or services for the public on the roadways of California. These acts ranged from removing a broken board from the roadway, to saving the lives of people trapped in a burning building. In six instances in the past year, recognition for valor was given to officers for their actions over and above the call of duty, which resulted in the saving of lives.

Services afforded the people of this State also include public information and education. The purpose of Public Information Traffic Safety Education activities in the department as found under the heading "Education," is to assist enforcement activities in providing for the safe and efficient movement of traffic, and for the protection of human life on the roadways of California.

This purpose is consistent with the basic objective of the California Highway Patrol, and the program is designed to provide a service to the motoring public that supplements, but is not an integral part of, all other activities of the department.

The overall program is designed to create broader public awareness of traffic problems; encourage proper individual behavior by motorists; stimulate an even greater degree of confidence and respect for the Patrol and its members by the motoring public, and thus increase compliance with the law; and educate highway users in safe driving and safe pedestrian practices.

The Public Information Traffic Safety Education program functions at all levels of the department's organizational structure. General planning, program development, and activities which are statewide in scope are conducted at headquarters. Each zone commander has a staff member who conducts certain phases of the program throughout the zone and assists area command personnel in phases of the local activity.

Safety education for youngsters.

Education Program Valuable

The great value of the Public Information program is strongly evident in those phases of the department's program such as the enforcement of the provisions of the Vehicle Code requiring drivers to drive in the right hand lane and other violations prohibiting the impeding of the flow of traffic. These violations of law, although clearly defined, are difficult to enforce, and the effectiveness of the enforcement effort is largely dependent upon the effectiveness and completeness of the safety education activities.

In these instances, the department instituted a broad, complete, and long-range safety education program using all media of communication available. This safety program was closely integrated with the enforcement effort of the department. The effects of the radio, television and newspaper education program coupled with the activity of enforcement personnel were evident throughout the State within a short period. Although actual statistics were not available, general observation revealed greatly improved conditions statewide.

While the obligation to perform *services* is not specifically defined in any statute, it is perhaps found in

the fact that any governmental organization must demonstrate that the right way is the easier and better way of life.

Research Undertaken

In the past 12 months there has been inaugurated within the department a program of research and evaluation in an attempt to objectively test all present methods of operation and to conduct research to determine possible improvements. This evaluation has taken the form of surveys by various governmental agencies. The Department of Finance, the Personnel Board and Legislative Analyst's office, have completed surveys designed to improve organizational, staffing and operational patterns. In addition, the planning and research section of the department has been instructed to conduct numerous experiments to determine fields for improvement in techniques of patrol as well as possible advances of administrative practices.

The present status of this evaluation program finds that the number of Vehicle Code statutes has increased from some 200 in the year 1933 to 1,580 in the year 1960. At present, it requires the full time of a captain to act as technical consultant to the Legislature while in session, and to interim committees during the balance of the year, in order that the Legislature may be informed of the need for new, or re-evaluation of old, statutes.

The growth in the technical aspect of such statutes has increased the need for officer training in order that enforcement of such regulations as registration, commercial vehicle equipment, and safety device standards can be uniformly carried out throughout the State. This need is particularly emphasized when it is realized that very little enforcement is given this type of regulation by city police and other officers who are not afforded the technical training necessary to the interpretation and application of these complex laws.

Problem Areas Cited

In the field of physical control of traffic there has been a marked increase in the demand upon officers' time occasioned by the concentration of traffic flows on our freeway system. In order to reach the source of any impediment, the department has increased the use of the motorcycle, with an attendant increase in hazard which use of this device brings.

There appears the need for development of improved methods of observation of highway traffic flows on our freeway system, together with improved methods of communication between the driver and the officer who supervises the traffic flow. Recent experiments indicate that methods must be developed which will allow easier identification of the officer and the vehicle by motorists using high traffic flow, divided highways. These highways of limited access have so reduced the ability of the officer to detour traffic that the need for immediate physical control of traffic impediment has become an increasing problem. With 1,900 miles of freeways in operation, 1,000 of which are full freeways, this problem becomes more acute each day.

In the field of observation, research must be conducted which will allow better surveillance of more vehicles by the individual officer. Recent experiments indicate that this can be accomplished in the more rural areas through the use of fixed wing aircraft. These experiments reveal that in the eastern regions of the State the utilization of four of this type aircraft as a supplement to ground units, could economically and efficiently provide a high degree of supervision and service to the motorists using the road.

Observation of the driver and his performance must be improved by developing methods for testing physical defects and temporary disability, such as is occasioned by intoxication.

A program has been inaugurated at Wheeler Ridge on U.S. 99 which will greatly expand the process of technical inspection of commercial vehicles. As part of the interstate program the Division of Highways has constructed a facility which will allow rapid weighing of some 200,000 vehicles per year, together with an efficient check of the registration and miscellaneous equipment and braking systems of 30,000 of these vehicles. It is planned to expand this type of installation to a point where reasonable control of these technical types of vehicle regulations can be expected.

In the field of investigation it is evident that the hit-and-run driver is receiving sufficient attention to suppress the evasion of responsibility in the required reporting of accidents. However, increased automobile thefts with all their attendant ill effects should be dealt with by supplementation of personnel who specialize in this field of enforcement.

Also, budgetary provisions should be made for improving the reporting and filing of auto theft information. With the conversion of the present files to keypunch methods of storage and access this problem could be greatly reduced.

In the field of immediate record review there has been an attempt to improve the application of the officer's efforts to the immediate problems which he faces. There has been some supplementation of supervisory personnel at the sergeants' level, and training courses provided which assist them in attaining the knowledge necessary to properly evaluate available records and to better direct the officer in his activities.

In the field of research, experiments have been conducted in deployment of manpower upon our freeway system. From these experiments it is evident there is a great need for further exploration of methodology in this recently developed field.

One of the most pressing needs of the department is the need for improvement and expansion of the communications system. This need is always justified on the basis of its necessity for adequate protection of the officer as well as the public. In addition to protection, rapid communications promotes the efficiency which allows limited personnel to deal with the problem of supplying rapid service to cope with emergencies.

Many other fields of research are being explored at the direction of the Legislature, such as seat belt effectiveness, commercial vehicle operation, fields of research needs, train and automobile accident involvement, and transportation of flammables. These directed projects, as well as the constant need for review of administrative and operational practices, indicate that present research personnel and equipment must be supplemented.

In the field of prosecution; in the adjudication of cases investigated by patrol personnel, there appears the need for study of improved methods. The time taken to render testimonial assistance in civil litigation is presently charged against the patrol budget. Possibly, a more equitable arrangement would be that this cost would be a legitimate charge against the litigants involved, and statutory direction should be obtained requiring the payment to the State of these expenses.

In the field of criminal prosecutions a method of uniform tests to be used in arrests involving intoxication should be explored. It is believed that a program of indoctrination which would emphasize the testimony of the officer as primary evidence, with secondary consideration given to chemical tests, might be advisable. Another area which would bear exploration is the possibility of developing statewide uniform citation and complaint forms. With these forms could well come the logical development of a statewide uniform bail schedule.

Need for Followup

In the field of prosecution falls the problem of adequate followup in regard to those who disregard their promise to appear. The present system of serving warrants has allowed accumulation of such a number of unserved documents that there is some question as to the efficiency of the process as a whole. The present practice of placing stops against the driver's licenses of those who fail to appear has been reasonably effective, but the delay in this type of action somewhat reduces the curative effect for which the citation was intended.

In the field of record keeping it is believed that constant review has brought this process to a workable optimum. Application of electronic computer methods has provided access to correlated information which was impossible in the past. Some difficulty is experienced in obtaining statewide information, as not all local departments have seen fit to use standard report forms. It is believed that with an expansion of the training program for outside agencies, which is carried on at the Patrol Academy, improved skill in collection of data will result in better information for use in planning and analysis by all the agencies concerned.

New Academy Needed

Throughout this report and in Assembly interim committee discussions, there appears one need that seems to be commonly acepted by both the department and those who are reviewing its operations. This is the need for the department to greatly expand its training activities.

Such expansion should be to the extent that an additional training academy is established in either a central or southern location within the State. Facilities at this academy should be utilized in the training of inservice personnel, as well as officers of outside agencies, in the technical and specialized skills necessary in the control function of the automotive transportation system.

Study of this expanded training activity indicates that it would require a facility costing approximately $2,000,000, and should envision budgeting to allow staffing by uniformed personnel as well as nonuniformed technical specialists and educators from outside the department. This staffing and operational budget would require an annual budget figure of approximately $475,000.

It is in the field of *services* that the greatest question exists in regard to patrol responsibility. Channeling of traffic through our freeway system has tended to consider the problem of mass movement of traffic rather than the misfortune or the lack of ability of the individual. Freeways cannot be designed which will compensate for the diversity in human behavior which is found among our motoring public.

With the finest highway system in the world, the flat tire, the accident, the motorist out of gasoline, or a spilled load, still constitute a major problem. This problem can assume bewildering proportions to the individual who is far from home, unacquainted with the situation and virtually helpless in his efforts to secure immediate aid. While this situation constitutes a problem of the individual, it also jeopardizes the flow of traffic which the freeway must accommodate.

In consideration of these two aspects it appears that both for the individual benefit, and the welfare of motorists as a whole, the practice of rendering assistance and service must be perpetuated and possibly expanded. Again, this raises the problem of time expended and personnel requirements.

Weighed in Light of Need

As in all other aspects of control of the operation of our highway system this service activity must be weighed in the light of its need and relative moral and economic relationship to governmental obligations. In providing a basis for legislative decision in this regard, the preceding portions of this report attempt to describe the meaning of each control function as it exists within the Department of California Highway Patrol at the present time. In addition to this, there are figures which indicate the extent of the efforts of the department to discharge its responsibilities. From these it is believed that the question of budgetary augmentation or adjustment can be intelligently evaluated.

If the committee agrees that the terms in which the departmental operation has been defined are appropriate and adequate there appears a possible solution to one of the most persistent and pressing problems facing the department. This problem has been the one which involves the department's inability to describe in proper terms the extent and complexity of its operation, so that legislative authority can compare and contrast the relative needs. If this present organization and description of patrol duties is reviewed and found adequate, it appears that the patrol should revise its record system to account for time spent in each of the functions listed.

From this can be developed a new method of program budgeting which will allow quantitative and qualitative evaluation by all interested agencies. While this transition will require a period of one or two years, it is believed that solution to the long-standing problem of inability to properly present its needs will have been established.

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